

Surface Sediment Field Sample Record

Shipping Date: 7/11/01

Project Name:	le to	5 3/4 Pro	ject No	o: 040049	-11 TZ	Station ID: T:7A-7
Sampling Crew:	Data 1	JOHNESSA DAW !) sciker	Com Bilian Con	12 Ame	
Sampling Vessel:	KI L	م درسال کی معلم		Sampling Method		Le bear
		use (acces for man	Cres			- 1887
		47616.5566' N			ri PANCELT CL	AN 65T ICKTSEN
		ong. 122 2 2 3, 40A	(,= ,			
	NAD 83 /		Zone:			
Sample Number:	T17/	1 - 7				
Analysis:	Metals / E	BNAs / VOCs / PCBs / Pes	st / Herb .	/ TBTs / Diox-Furans	1= 6	
(TS / @raij	Size / TOO / TVS / Amm	ionia / Su	ulfides	SUCK	<u>م</u>
	(Circle Ap	propriate Analyses)				
Field Test Results				Comments		
Salinity:		ppt		•		· · · · · · · · · · · · · · · · · · ·
Ammonia:		mg/L	. C.	to the second		
Grain Size:				ml Fines: = 3.9		
	rwan:	K= -16.1'++	3.30	= -8.81 Mis	1.0 A 20 1:0=	to \$119/01 Kan-
Grab Number: [Water Depth: 3		Penetration Depti		Time: 11:33
	(circle)	AVS/SEM; Total Sulfides				, Inne. 11 · 33
	(Circle)	1				
Sediment Type: cobble		Sediment Color:		Sediment Odor:	LIDE	Comments: [ZEJÜZY - (ABLÉ 1.3 JAWS
		D.O.	1	none	H2S	PERSTER
gravel	.1	gray	- 1	slight	Petroleum	1.i JAWS
silt clay		black	ì	moderate strong	other:	
•		brown	- 1	strong		
organic matter		brown surface		overwhelming		
Grab Number: 2				Penetration Depti	1: <u>7-3 Cm</u>	Time: //: 44
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides	s; voc s	ample (circle)		1
Sediment Type:		Sediment Color:	!	Sediment Odor:		Comments:
cobble		D.O.	ļr	none	(H2S)	wood Deiszis ?
gravel		gray		slight	Petroleum	SHELL FRACS
Sand C M F		black)	/ /	moderate 🗡	other:	
Silt clay Surve		brown	1	strong		
organic matter		brown surface		overwhelming		
Grab Number:	·····	Water Depth:		Penetration Dept	n:	Time:
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides	; VOC S	Sample (circle)		
Sediment Type:		Sediment Color:		Sediment Odor:		Comments:
cobble		D.O.	1	none	H2S	
gravel		gray	:	slight	Petroleum	
sand C M F		black	ļı	moderate	other:	
silt clay		brown	:	strong		
organic matter		brown surface		overwhelming		
Crab Number:		Water Depth:		Penetration Dept	h:	Time:
Bioassay / Chemistry	(circle)	AVS/SEM: Total Sulfides	s: VOC S	Sample (circle)	····	
Sediment Type:		Sediment Color:		Sediment Odor:		Comments:
cobble		D.O.		none	H2S	1
gravel		gray		slight	Petroleum	
sand C M F		black	i	moderate	other:	
silt clay		brown	ŀ	strong		
organic matter		brown surface	1	overwhelming		

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ANCHOR ENVIRONMENTAL CITY

Surface Sediment Field Sample Record

Collection Date: 7/13/01
Shipping Date: 9/17/01

Sampling Crew:	DAM HO	ENNESSY DALO DIC	KINSON 15,21AN	60 CEAN	
Sampling Vessel:	1. Ju Nichall	THE AND BY	Sampling Method	1: //4/1/2/2/2/	ic brisis
Subcontractor(s):	Buch with	nu (p. (SE) 60 - 1234	(KEK)		
		7016.5655'N	Weather	TI MOSTLY LA	work 65°F, 10KTS.00
•		122" 23:40621			· · · · · · · · · · · · · · · · · · ·
	MAD 88 / WO				
Sample Number:	1 / A	As / VOCs //PCBs/l Pest / He	erb / TDTs / Diay Euraps		
		ize / TOO/ TVS / Ammonia /		SUCC	المحالية ا
			Sumues		
	(Circle Appro	opriate Analyses)			
Field Test Results			Comments	s:	
Salinity:		ppt			
Ammonia:		mg/L			
Grain Size:	m	Coarse:	ml Fines:		
V	アノンシー	= -25,0'+16,89	= -21.1 MULL	Milidated	8/19/CIR
		Water Depth: 28 C	Penetration Depth	h. 177 can	Time: 12:07
irab Number:		water Depart.	—) renessation beps	<u>61 (4);</u>	
ioassay / Chemistry	(circle) A	VS/SEM; Total Sulfides; VO	C Sample (circle)		1
ediment Type:	s	ediment Color:	Sediment Odor:		Comments:
obble	D	.O.	none	H2S	WEHT SHEEN
ravel	Drive gl	ray Vient	stight	Petroleum	WEST DETSHIS SHELL
and QM F		lack	moderate	other:	MOVE BRICK FRAGS.
It clay,	ь	rown	strong		
rganic matter	4 6	rown surface	overwhelming		
Grab Number:		Water Depth:		h:	Time:
Bioassay / Chemistry		Water Depth: VS/SEM; Total Sulfides; VO sediment Color:	Penetration Dept	h:	Time:
lioassay / Chemistry sediment Type:	s	VS/SEM; Total Sulfides; VO	Penetration Depti	th: H2S	
Bioassay / Chemistry Sediment Type:	S	VS/SEM; Total Sulfides; VO sediment Color:	Penetration Depti C Sample (circle) Sediment Odor:		
Bioassay / Chemistry Sediment Type: Sobble Bravel	S D g	VS/SEM; Total Sulfides; VO sediment Color: 0.0.	Penetration Depti C Sample (circle) Sediment Odor:	H2S	
sioassay / Chemistry sediment Type: sobble stravel stand C M F	S D g b	VS/SEM; Total Sulfides; VO lediment Color: 0.O. lray	Penetration Depti C Sample (circle) Sediment Odor: none slight	H2S Petroleum	
ioassay / Chemistry rediment Type: obble ravel and C M F ilt clay	S D G b	NS/SEM; Total Sulfides; VO sediment Color: 0.O. gray	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum	
sioassay / Chemistry sediment Type: obble sravel sand C M F silt clay organic matter	S D G b	AVS/SEM; Total Sulfides; VO sediment Color: 0.O. aray alack arown prown surface	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other:	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F ilt clay rganic matter Grab Number:	S D B b	AVS/SEM; Total Sulfides; VO sediment Color: D.O. stray slack strown surface Water Depth:	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti	H2S Petroleum other:	
ioassay / Chemistry ediment Type: obble ravel and C M F ilt clay rganic matter Grab Number:	S S S S S S S S S S S S S S S S S S S	AVS/SEM; Total Sulfides; VO Sediment Color: 0.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle)	H2S Petroleum other:	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F illt clay rganic matter Grab Number: Bioassay / Chemistry	S S D D D D D D D D D D D D D D D D D D	AVS/SEM; Total Sulfides; VO Sediment Color: D.O. Stray Stra	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor:	H2S Petroleum other:	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F ilt clay rganic matter Grab Number: Gloassay / Chemistry Sediment Type:	(circle)	AVS/SEM; Total Sulfides; VO sediment Color: D.O. stray silack strown surface Water Depth: AVS/SEM: Total Sulfides; VC Sediment Color: D.O.	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none	H2S Petroleum other:	Comments:
ioassay / Chemistry ediment Type: bbble ravel and C M F ilt clay rganic matter Grab Number: Bioassay / Chemistry Gediment Type:	(circle)	AVS/SEM; Total Sulfides; VO sediment Color: 0.O. pray plack prown prown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: 0.O. gray	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight	H2S Petroleum other: th: H2S Petroleum	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F ilt clay organic matter Grab Number: Bioassay / Chemistry Gediment Type: cobble gravel	(circle)	AVS/SEM; Total Sulfides; VO sediment Color: D.O. stray silack strown surface Water Depth: AVS/SEM: Total Sulfides; VC Sediment Color: D.O.	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other:	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F illt clay rganic matter Grab Number: Gloassay / Chemistry Gediment Type: cobble gravel sand C M F	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: 0.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color: 0.O. Irray	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum other: th: H2S Petroleum	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F filt clay rganic matter Grab Number: cioassay / Chemistry dediment Type: obble ravel and C M F filt clay	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: 0.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: 0.O. Irray I	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other: th: H2S Petroleum	Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F filt clay rganic matter Grab Number: bioassay / Chemistry dediment Type: obble ravel and C M F filt clay organic matter	(circle) A	AVS/SEM; Total Sulfides; VO sediment Color: 0.O. 1.O. 1.O	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other: th: H2S Petroleum other:	Comments:
ediment Type: Dibble Tavel End C M F It clay Traganic matter Frab Number: Licassay / Chemistry Lediment Type: Dibble Tavel Licassay / Chemistry Lediment Type: Lediment Type: Lediment C M F Litt clay Licassay / Chemistry Lediment Type: Led	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: 0.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: 0.O. Irray Irrown Irro	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other: th: H2S Petroleum other:	Comments: Time: Comments:
ediment Type: bbble ravel and C M F dit clay rganic matter broad / Chemistry dediment Type: bobble ravel and C M F dit clay rganic matter broad / Chemistry dediment Type: bobble ravel and C M F dit clay broad / Chemistry	(circle) A	AVS/SEM; Total Sulfides; VO sediment Color: D.O. Bray Black Brown Brown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Bray Black Brown Brown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Bray Black Brown Brow	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle)	H2S Petroleum other: th: H2S Petroleum other:	Comments: Time: Comments:
ediment Type: bbble ravel and C M F dit clay rganic matter broad / Chemistry bediment Type: bobble ravel and C M F bilt clay rganic matter broad / Chemistry bediment Type: cobble aravel and C M F bilt clay broad / Chemistry	(circle) A	AVS/SEM; Total Sulfides; VO sediment Color: D.O. Bray Black Brown Brown surface Water Depth: AVS/SEM; Total Sulfides; VO sediment Color: D.O. Bray Black Brown Brown surface Water Depth: AVS/SEM; Total Sulfides; VO sediment Color: D.O. Bray Black Brown Brow	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: Sediment Odor: Sediment Odor: Sediment Odor:	H2S Petroleum other: th: H2S Petroleum other:	Comments: Time: Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F illt clay rganic matter Grab Number: Sioassay / Chemistry Sediment Type: obble gravel sand C M F silt clay organic matter Grab Number:	(circle)	AVS/SEM; Total Sulfides; VO sediment Color: D.O. Irray Islack Irrown Surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Irray Irrown Surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Irrown Surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Sediment Color: D.O.	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none	H2S Petroleum other: th: H2S Petroleum other:	Comments: Time: Comments:
ediment Type: obble ravel and C M F illt clay rganic matter Grab Number: bloassay / Chemistry dediment Type: obble gravel and C M F silt clay organic matter Grab Number: cobble gravel dediment Type: cobble gravel dediment Type:	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: D.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Irray Irrown Irrown surface Water Depth: Irrown Irrown	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight	H2S Petroleum other: th: H2S Petroleum other: oth: H2S Petroleum	Comments: Time: Comments:
ioassay / Chemistry ediment Type: obble ravel and C M F ilt clay irganic matter Grab Number: Cobble gravel sand C M F silt clay organic matter Grab Number: Cobble gravel sand C M F silt clay organic matter Grab Number: Cobble gravel sand C M F silt clay organic matter Grab Number: Cobble gravel Sediment Type: Cobble gravel Sediment Type: Cobble gravel Sediment Type: Cobble gravel sand C M F	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: D.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Irray I	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other: th: H2S Petroleum other:	Comments: Time: Comments:
Grab Number: Bioassay / Chemistry Gediment Type: Cobble Gravel Sand C M F Silt clay Organic matter Grab Number: Bioassay / Chemistry Sediment Type: Cobble Gravel Sand C M F Silt clay Organic matter Grab Number: Bioassay / Chemistry Sediment Type: Cobble Gravel Sand C M F Silt clay Organic matter Sediment Type: Cobble Grab Number: Bioassay / Chemistry Sediment Type: Cobble Gravel Sand C M F Silt clay Organic matter	(circle) A	AVS/SEM; Total Sulfides; VO Sediment Color: D.O. Irray Islack Irrown Irrown surface Water Depth: AVS/SEM: Total Sulfides; VO Sediment Color: D.O. Irray Irrown Irrown surface Water Depth: Irrown Irrown	Penetration Depti C Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depti OC Sample (circle) Sediment Odor: none slight	H2S Petroleum other: th: H2S Petroleum other: oth: H2S Petroleum	Comments: Time: Comments:

ANCHOR Surface Sediment Field Sample Record

Collection Date: 1/15/67

Shipping Date: 7/17/0/

Project Name: Hy	DOS 7/4	Project No: 🖒 (🕬 🕒	19-11 TZ	Station ID: T174-6
]		THE DIEKINGSON BYLIN	n bocker	
	ile jurgue of phone		ng Metnod: אַני אַר	uc brokes
	356 16 20 6 10 16 61 61			
	/Lat. 47° 16.561		Weather: אוניאדור או	WAN 6505 10EBE NW
	/W/Long. 122 2.3		-/	
· · · · · · · · · · · · · · · · · · ·	AD 83 WGS 84	Zone:		
Comple Alumber:				
Sample Number:	LITA-U	Bs/ Pest / Herb / TBTs / Diox	(Eurans	
	S Qrain Size (OQ / TV:		FIDC	
			900	
()	Circle Appropriate Analyse	5)		
Field Test Results		(Comments:	
Salinity:		ppt		
Ammonia:		mg/L		
Grain Size:	ml Coarse:	ml Fines:		
rwi	QUE = - 25,9'+	1693 = 79.51x	mund Validat	8/19/01 Km
1	Mates Dee	4. 73 1.68 Danet	tion Donth	Time: 17:25
Grab Number:	water Dep	th: 23.6 FT Penetra	ition Depth:	Time: 12.25
Bioassay / Chemistry (c	circle) AVS/SEM; Total	Sulfides; VOC Sample (circl	e)	
Sediment Type:	Sediment Color:	Sediment Oc	tor:	Comments:
	D.O.	none	H2S	
gravel sand C M F	gray	slight	Petroleum	CVCTL PENETRATIO
sand C M F	black	moderate	other:	COLICIO
sand C M F	brown	strong	outer.	
organic matter	brown surface	overwhelmin	n	
Grab Number: Bioassay / Chemistry (c) Sediment Type:		th: 25 (16+ Penetra Sulfides; VOC Sample (circ Sediment Oc	e)	Comments:
cobble	D.O.	éone ,	H2S	
gravel	gray	slight	Petroleum	
	black	moderate	other:	
sand C M F	brown		outer.	
and the same of th	(brown surface	· ·	na	
organic matter	(Brown sarrace	, Over this in the	·9	
Grab Number:	Water Dep	oth: Penetr	ation Depth:	Time:
Bioassay / Chemistry (circle) AVS/SEM; Tota	Sulfides: VOC Sample (circ	le)	
Sediment Type:	Sediment Color	Sediment O	dor:	Comments:
cobble	D.O.	none	H2S	
gravel	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
silt clay	brown .	strong		
organic matter	brown surface	overwhelmi	ng	
		_	5	T:
Grab Number:	Water De		ation Depth:	Time:
	<u> </u>	d Sulfides, VOC Sample (circ		Commonte
Sediment Type:	Sediment Color			Comments:
cobble	D.O.	none	H2S	
gravel	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
silt clay	brown	strong		
organic matter	brown surface	overwhelmi	ing	

Recorded by:

DD+DP4

ANCHOR Surface Sediment Field Sample Record

Collection Date: 7/,3/3/

Shipping Date: > // 4/0/

Project Name: 1-, 6 50 5/4 Project No: 0 (0044-4) TE Station ID: 7194-5 Sampling Crew: Dan Hornetts y Once Dickington Bigging (concern)
Sampling Vessel: Annacca Anna Sampling Method: Atalicancia Caracter Sampling Vessel: 12/1 now 64 Avril Subcontractor(s): () com with (policy) to your (dek) Weather: POST & CLOTH CS F 1014TS ELN W Station Coordinates: N / Lat. 471 (6.53701 N E/W/Long. 122 23, 3026 W Datum: 14AD 831 WCS 84 Sample Number: Analysis: Metals / BNAs / VOCs /(PCBs) / Pest / Herb / TBTs / Diox-Furans TS // Grain Size / TOC TVS / Ammonia / Sulfides (Circle Appropriate Analyses) Field Test Results Comments: Salinity: Ammonia: Grain Size: mi Coarse: MUDINE = -29,1 + 15,39 = -21,9' MUND Validates 8/19/01Kg. Water Depth: 27.1 Penetration Depth: 2 Grab Number: Bioassay /(Chemistry) AVS/SEM; Total Sulfides; VOC Sample (circle) (circle) Comments: Sediment Type: Sediment Color: Sediment Odor: FEW SHELL FRALS MACE SAND D.O. (H2S) none cobble (win 7236) HAY gray slight ? Petroleum gravel sand C M F black moderate other: sift clay Drown strong brown surface, overwhelming organic matter Grab Number: __ Water Depth: Penetration Depth: Time: AVS/SEM; Total Sulfides; VOC Sample (circle) Bioassay / Chemistry (circle) Comments: Sediment Color: Sediment Odor: Sediment Type: H2S cobble D.O. none slight Petroleum gravel gray moderate other: sand C M F hiack silt clay brown strong brown surface overwhelming organic matter Penetration Depth: Water Depth: Grab Number: __ AVS/SEM; Total Sulfides; VOC Sample (circle) Bioassay / Chemistry (circle) Sediment Color: Sediment Odor: Comments: Sediment Type: H2S none D,O. cobble sliaht Petroleum gravel gray moderate other: black sand C M F strong brown silt clay organic matter brown surface overwhelming Penetration Depth: Water Depth: Grab Number: AVS/SEM: Total Sulfides; VOC Sample (circle) (circle) Bioassay / Chemistry Comments: Sediment Color: Sediment Odor: Sediment Type: H2S none cobble D.O. Petroleum slight gravel gray other: sand C M F black moderate strong silt clay brown prown surface overwhelming organic matter

Recorded by:

Recorded by:

Surface Sediment Field Sample Record

Collection Date: 3/4/6/

Sampling Crew: Day	· HENNESSY DALE D	MICKENSON BELOW	30 DILAN	
Sampling Vessel: 15./	CHANCE NO.	Sampling Metho	d: Name	. r bear
Subcontractor(s): //), c	remotion (miss) boung	or Goral	17.91);	
Station Coordinates: N / Lat	47816,5304 N	Weathe	er: Line of	INK TOF ICKNEW.
	Long. 1225 23- 2999		<u> </u>	1M. 11.1 1.2.236 100
Datum: MAD 8		Zonc:		
Sample Number: 10				·.
	/ BNAs / VOCs / PCBs) Pest		SUDO	n Len
(IS/G	rain Size / TOC TVS / Ammo	nia / Sulfides	2	
(Circle	Appropriate Analyses)			
Field Test Results		Comment	s:	
Salinity:	ppt			
Ammonia:	mg/L			
Grain Size:	ml Coarse:	ml Fines:	·	
1)d	NDUNT = -2111'+ 14	1.10 = 11. 4' 42	Jan 1 Tr.	ES 8/19/10/2000
170	CDUICE - O-M	166 - I GIT IVILLA	C. Valian	Let 2/1/10/Part 0
Grab Number:	Water Depth: 21	Penetration Dept	h: 🗶	Time: 14:01
Bioassay / Chemistry (circle)	AVS/SEM; Total Sulfides;	VOC Sample (circle)		
ioassay / Orientistry (Circle)	AVO/OLIVI, Fotal Sulfides,	VOC Gample (Circle)		7
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	TO JECT TO THE THAT
gravel Sand C M F CF CT	gray	slight	Petroleum	12.60 TEPENET
and CMF CES	black	moderate	other:	D.V.C.
illt clay	brown	strong		
	1			
Grab Number:2	Water Depth: 2.0		h: <u>K</u>	Time: <u>14</u> : 15
Grab Number:	Water Depth: 20	. (7) Penetration Dept	h: <u>K</u>	_
Grab Number:	Water Depth: 20	Penetration Dept	h: <u>K</u>	_
Grab Number:	Water Depth: 2.c° AVS/SEM; Total Sulfides; Sediment Color:	Penetration Dept VOC Sample (circle) Sediment Odor:		_
Bioassay / Chemistry (circle) Sediment Type: cobble	Water Depth: 20 AVS/SEM; Total Sulfides; Sediment Color; D.O.	Penetration Dept VOC Sample (circle) Sediment Odor: none	H2S	7 _
Grab Number:	Water Depth: 2.0 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black	Penetration Dept VOC Sample (circle) Sediment Odor: none slight	H2S Petroleum	_
Grab Number:	Water Depth: 2.0 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum	_
Grab Number:	Water Depth: 20 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other:	Comments: Let
Grab Number:	Water Depth: 20 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum other:	Comments: Let
Grab Number:2 Bioassay / Chemistry (circle) Sediment Type: Cobble gravel Sand C M F	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Dept	H2S Petroleum other:	Comments: Let
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Dept	H2S Petroleum other:	Comments: Let
Grab Number:	Water Depth: 20 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 21 AVS/SEM; Total Sulfides; Sediment Color:	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor:	H2S Petroleum other:	Comments: Let
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.I AVS/SEM; Total Sulfides; Sediment Color: D.O.	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none	H2S Petroleum other:	Comments: Let PETITY Let IN JAMS Time: 14:20 Comments: WASD DEBATS:
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.I AVS/SEM; Total Sulfides; Sediment Color: D.O. gray	Penetration Dept VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight	H2S Petroleum other: th: 23 (12) H2S' Petroleum	Comments: Let PETITY Let IN JAMS Time: 14:20 Comments: WASD DEBATS:
Grab Number:	Water Depth: 2.c AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black hrown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other:	Comments: Let
Grab Number:	Water Depth: 2.c AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum other: th: 23 (12) H2S' Petroleum	Comments: Le 6 PETICH Le 6 IN JANUS Time: 14:20 Comments: La 6 Comments:
Grab Number:	Water Depth: 2.c AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black hrown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other: th: 23 (12) H2S' Petroleum	Comments: Let PETITY Let IN JAMS Time: 14:20 Comments: WASD DEBATS:
Grab Number:	Water Depth: 2.c AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum other: th: 23 cm H2S' Petroleum other:	Comments: Le 6 PETICH Le 6 IN JANUS Time: 14:20 Comments: La 6 Comments:
Grab Number:	Water Depth: 2.c AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black hrown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 W. gray black brown brown surface	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other: th: 23 cm H2S' Petroleum other:	Comments: Lete PETITY - Lete IN JAWS Time: 14:20 Comments: WISD DEBILS, PETAL PUBSER. LAISTE
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2. AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2. AVS/SEM; Total Sulfides; Sediment Color: D.O. W. Gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides;	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none Slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none Slight moderate strong overwhelming Penetration Depty VOC Sample (circle)	H2S Petroleum other: th: 23 cm H2S' Petroleum other:	Comments: IN JAWS Time: 14:20 Comments: WOD DOMESS; PATTAL FURSTING Long.
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; Sediment Color: Sediment Color: Water Depth: AVS/SEM: Total Sulfides; Sediment Color:	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor:	H2S Petroleum other: th: 23 (a) (H2S) Petroleum other:	Comments: IN JAWS Time: 14:20 Comments: WWW DEBALS, ACTAL PUBSER.
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black hrown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. Sediment Color: D.O. Sediment Color: D.O. D.O. Sediment Color: D.O. D.O.	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none Slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none	H2S Petroleum other: th: 23 CM H2S' Petroleum other: th:	Comments: IN JAWS Time: 14:20 Comments: WOD DIAPIS, PETAL FUBSTR Loly Time:
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM: Total Sulfides; Sediment Color: D.O. gray Sediment Color: D.O. gray Diack brown brown Surface	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight sediment Odor: none slight	H2S Petroleum other: th: 23 cm H2S' Petroleum other: th:	Comments: IN JAWS Time: 14:20 Comments: WOD DOMESS; PATTAL FURSTING Long.
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black hrown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. Sediment Color: D.O. Sediment Color: D.O. D.O. Sediment Color: D.O. D.O.	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum other: th: 23 CM H2S' Petroleum other: th:	Comments: IN JAWS Time: 14:20 Comments: WOD DOMESS; PATTAL FURSTING Long.
Grab Number:	Water Depth: 2.C AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: 2.1 AVS/SEM; Total Sulfides; Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM: Total Sulfides; Sediment Color: D.O. gray Sediment Color: D.O. gray Diack brown brown Surface	Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depty VOC Sample (circle) Sediment Odor: none slight sediment Odor: none slight	H2S Petroleum other: th: 23 cm H2S' Petroleum other: th:	Comments: IN JAWS Time: 14:20 Comments: WOD DIAPIS, PETAL FUBSTR Loly Time:

Surface Sediment Field Sample Record

Collection Date: 7/13/01
Shipping Date: 7/13/01

ENVIRONMENTAL LLL.C.		e Sealment Field	•		AN-403
Project Name: 🛶 🕻			ot No: OF DOMA		Station ID: THEA
		HENNIGSSY DALE			
Sampling Vessel:	16/6 K	MYVEY HAVINE	Sampling Method	: H40161	LIC (1445)
Subcontractor(s):	DICKEIN	MONEY HOUSE GOVE			
Station Coordinates:	N / Lat.	47° 16,5304'N	Weathe	5 117m 7	OF IDETTERN
	MXD183 /	ng. 127 73. 0960 wgs 84 z	<u>′ ω'</u> one:		,
Sample Number:	7-41	A 4 AN-403	A.		
Analysis:	Metals / B	NAs / VOCs / CBs/ Pest / Siže / TOC// TVS / Ammoni	Herb / TBTs / Diox-Furans	EVac.	TRT
	(Circle Ap	propriate Analyses)			
Field Test Results Salinity:		ppt	Comment	s:	
· ·					
Ammonia:		mg/L	- I Fire		
Grain Size:		ml Coarse:	ml Fines:		E min 2
	1000	ME = 37,9 + 4.	:)4= -33.7 Muli	s l'elviot	S 8/19/01 Ken-
Grab Number:		Water Depth: 37.	Penetration Dept	h: 23 cm	Time: 14:54
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides; V	OC Sample (circle)		7
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
obble Signal	16-10	D.O.	none	H2S	SLIGHT SHELL !
ravel yill 'm	DioLK-	gray	slight	Petroleum	WEED DUBRES
and CMF Soft	DA JOH	black	moderate	other:	
ill vay		brown	strong		
organic matter	_	brown surface.	overwhelming		
			Developing Devel	t	T :
Grab Number:		Water Depth:	Penetration Dept	n:	Time:
	(circle)	AVS/SEM; Total Sulfides; V			70
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
cobble		D.O.	none	H2S	
ravel		gray	slight	Petroleum	
sand C M F		black	moderate	other:	
silt clay		brown	strong		
organic matter		brown surface	overwhelming		
Grab Number:		Water Depth:	Penetration Dep	th:	Time:
Bioassay / Chemistry	(circle)	AVS/SEM: Total Sulfides; \			~ 7 _
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
cobble		D.O.	none	H2S	
gravel		gray	slight	Petroleum	
sand C M F		black	moderate	other:	
silt clay		brown	strong		
organic matter		brown surface	overwhelming		
Grab Number:		Water Depth:	Penetration Dep	th:	Time:
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides; `	VOC Sample (circle)		
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
cobble		D.O.	none	H2S	
gravei		gray	siight	Petroleum	
sand C M F		biack	moderate	other:	
silt clay		brown	strong		
lorganic matter		brown surface	overwhelming		

MACTOLL Recorded by:

ANCHOR Surface Sediment Field Sample Record

Collection Date: 7/35/61 Shipping Date: Fig. 64

Project Name:	~				
Sampling Crew:	DAN	HERNESSY DAVE DE	Chinsen BillAn	becken	
Sampling Vessel	HIL NA	mily Anne			ic leppins
		SUN (MUSS) GOLDEN (1	307		
Station Coordinates:	: N / Lat.	47° 16. 4097'N		CCOME -	756 101056. NO
		ng. 1220 27.6766 w	_		<u> </u>
Datum:	MAD 83 /		- ::		***
Sample Number:	44. 2	Zinti			
		NAs / VOCs / PCBs) Pest / Her		SUOC	5 (7727)
		Size / OO / TVS / Ammonia /	Sulfides	2000	
	(Circle Ap	propriate Analyses)			
Field Test Results			Comments	s:	
Salinity:		ppt			
Ammonia:		mg/L			
Grain Size:	:	mi Coarse:	ml Fines:		
•	M	DUNE = - 39.7 1	2.9% = = 32.9	MASSAC 12	1.1-1-0 8/18/N
·					-
Grab Number:		Water Depth: 37.7	Penetration Depth	1: 27 Cm	Time: 15,12.2
ioassay (Chemistry)	(circle)	AVS/SEM; Total Sulfides; VOC	Sample (circle)		-
ediment Type:	-	Sediment Color:	Sediment Odor:		Comments:
obble		D.O.	none	H2S)	Somes weed FRAI
ravel	(DANK V	gray vuns	slight	Petroleum) JC. 12
iavei		[/			
177-4	COMME	black	moderate	other:	
and C M F	(DAM)			other:	
and C M F iltuciay) irganić matter	() _A vi	brown brown surface Water Depth:	strong overwhelming Penetration Depth		Time:
int (Clay) organić matter Grab Number: Bioassay / Chemistry	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC	strong overwhelming Penetration Depth Sample (circle)		-
organić matter Frab Number: Bioassay / Chemistry Bediment Type:		brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color:	overwhelming Penetration Depth Sample (circle) Sediment Odor:	1:	Time:Comments:
and C M F integration of the control of the contro		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O.	Penetration Depth Sample (circle) Sediment Odor: none	1:	-
and C M F organic matter Grab Number: Bloassay / Chemistry Gediment Type: Blobble Bravel		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray	Penetration Deptr Sample (circle) Sediment Odor: none slight	H2S Petroleum	-
and C M F organić matter Grab Number: Bioassay / Chemistry Gediment Type: cobble oravel and C M F		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black	Penetration Depth Sample (circle) Sediment Odor: none slight moderate	1:	-
and C M F rganic matter Grab Number: Gloassay / Chemistry Gediment Type: Obble ravel and C M F ilt clay		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong	H2S Petroleum	-
and C M F rganic matter Grab Number: Gloassay / Chemistry Gediment Type: Obble ravel and C M F ilt clay		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black	Penetration Depth Sample (circle) Sediment Odor: none slight moderate	H2S Petroleum	-
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rganić matter Grab Number:		brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth	H2S Petroleum other:	Comments:
and C M F rganic matter Brab Number: bioassay / Chemistry bediment Type: bobble ravel and C M F bilt clay rganic matter Brab Number: bioassay / Chemistry	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth:	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth	H2S Petroleum other:	Comments:
and C M F rganic matter Grab Number: licassay / Chemistry lediment Type: lobble ravel land C M F lit clay rganic matter Grab Number: licassay / Chemistry lediment Type: licassay / Chemistry lediment Type:	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color; D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color;	Penetration Deptr Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Deptr Sample (circle) Sediment Odor:	H2S Petroleum other:	Comments:
and C M F integration of matter Grab Number: inioassay / Chemistry dediment Type: obble ravel and C M F ilt clay rganic matter Grab Number: bioassay / Chemistry dediment Type: obble	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O.	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none	H2S Petroleum other:	Comments:
and C M F integration of matter Brab Number: Bloassay / Chemistry Bediment Type: Bloassay / Chemistry Brab Number: Brab Number: Bloassay / Chemistry Bediment Type: Bloassay / Chemistry	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight	H2S Petroleum other: H2S Petroleum	Comments:
and C M F integration of matter Grab Number: Grab Number: Grab Number: Grab Number: Gravel Grad C M F integration of matter Grab Number: Grab Numb	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black	Penetration Deptr Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Deptr Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other:	Comments:
granic matter Grab Number: Joans / Chemistry Jediment Type: Jobble Jobble	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong strong overwhelming	H2S Petroleum other: H2S Petroleum	Comments:
and C M F inganic matter Brab Number: bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter Brab Number: Broassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay organic matter	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other: H2S Petroleum other:	Comments: Time: Comments:
and C M F inganic matter Brab Number: bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter Brab Number: Broassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay organic matter	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong strong overwhelming	H2S Petroleum other: H2S Petroleum other:	Comments:
and C M F inganic matter Grab Number: bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter Grab Number: bloassay / Chemistry bediment Type: obble ravel and C M F ilt clay rganic matter Grab Number: cobble gravel and C M F ilt clay rganic matter Grab Number: cobble gravel and C M F ilt clay rganic matter Grab Number:	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sediment Odor: none slight moderate strong overwhelming	H2S Petroleum other: H2S Petroleum other:	Comments: Time: Comments:
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and C M F granic matter Grab Number: Gloassay / Chemistry Gediment Type: Gloassay / Chemistry Grab Number: Grab Number: Grab Number: Gloassay / Chemistry Gediment Type: Gloassay / Chemistry Gediment Type: Grab Number: Grab Num	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor:	H2S Petroleum other: H2S Petroleum other:	Comments: Time: Comments:
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and C M F arganic matter Brab Number: Bloassay / Chemistry Bediment Type: Bloassay / Chemistry Brab Number: Bloassay / Chemistry	(circle)	brack brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray black brown brown surface Water Depth: AVS/SEM; Total Sulfides; VOC Sediment Color: D.O. gray	Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sediment Odor: none slight moderate strong overwhelming Penetration Depth Sample (circle) Sediment Odor: none slight signt	H2S Petroleum other: H2S Petroleum other: H2S Petroleum other:	Comments: Time: Comments:

Surface Sediment Field Sample Record

Collection Date: 7/13/01 Shipping Date: 7/14/01

Project Name: 1-4	12 600	> 3/4 Project N	No: 6, 66-49 -	11 72	Station ID: 723A-5
Sampling Crew	: Dan A	FENNESSY DAVED	MICHINEON BRAING	GOUGAN	
Sampling Vessel			Sampling Method:	Mydicah	LICERAS
		ison (mss) Govern			
		47016, 4342'N	Weather:	COHE 70	" INKTS @ NW
	E/W/Lor	ng. 1225 6.2. 40981 W			
Datum.	CNAD 83 AV	WG3 84 Zone	:		
Sample Number			_		
Analysis		NAs / VOCs / PCBs / Pest / Her		1100	(7 'R)
	(TS) Offain	Size / TOC / TVS / Ammonia /	Sulfides 😁	VCC)	401
	(Circle App	propriate Analyses)			
Field Test Results			Comments:		
Salinity	·•	ppt			
Ammonia	:	mg/L			
Grain Size	:	ml Coarse:	ml Fines:		
		XINE = -39,5+ 3.5	4= -35.7 MUL	velicate	C 8/19/17/K
Grab Number:		Water Depth: 39.5	Penetration Depth:	7.5 cm	Time: 15:46
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides; VOC	Sample (circle)		1
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
cobble gravel Thinks SAND		D.O.	none	H2S/	LOTS OF WOOD DEADLY.
gravel Thinks	Dhic	gray	slight-	Petroleum	BeiCKEFRAGS.
sand C M F		biack	moderate	other:	Service Stieze FRAGE.
silt Clay		prown	strong		LIGHT Sheen
organic matter	,	prown surface	overwhelming		,
Grab Number:		Water Depth:	Penetration Depth		Time:
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides; VOC	Sample (circle)		,
Sediment Type:		Sediment Color:	Sediment Odor:		Comments:
cobble		D.O.	none	H2S	
gravel		gray	slight	Petroleum	
sand C M F		black	moderate	other:	
silt clay		brown	strong		
organic matter		brown surface	overwhelming		
Grab Number:		Water Depth:	Penetration Depth	ı:	Time:
Bioassay / Chemistry	(circle)	AVS/SEM; Total Sulfides; VO	······································		
Sediment Type:	(6), 6,67	Sediment Color:	Sediment Odor:		Comments:
cobble		D.O.	none	H2S	1
		gray	slight	Petroleum	
gravel		[□	1		
leand C M =		hlack	moderate	other:	i
sand C M F		black	moderate	other:	
silt clay		brown	strong	other:	
			strong overwhelming		
silt clay organic matter Grab Number:		brown brown surface Water Depth:	strong overwhelming Penetration Depti		Time:
silt clay organic matter Grab Number: Bioassay / Chemistry	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO	strong overwhelming Penetration Depti C Sample (circle)		
silt clay organic matter Grab Number: Bioassay / Chemistry Sediment Type:	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color:	strong overwhelming Penetration Depti C Sample (circle) Sediment Odor:	n:	Time:Comments:
silt clay organic matter Grab Number: Bioassay / Chemistry Sediment Type: cobble	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color: D.O.	strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none	H2S	
silt clay organic matter Grab Number: Bioassay / Chemistry Sediment Type: cobble gravel	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color: D.O. gray	strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight	H2S Petroleum	
silt clay organic matter Grab Number: Bioassay / Chemistry Sediment Type: cobble	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color: D.O.	strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none	H2S	
silt clay organic matter Grab Number: Bioassay / Chemistry Sediment Type: cobble gravel	(circle)	brown brown surface Water Depth: AVS/SEM; Total Sulfides; VO Sediment Color: D.O. gray	strong overwhelming Penetration Depti C Sample (circle) Sediment Odor: none slight	H2S Petroleum	_ ·

Recorded by:

Surface Sediment Field Sample Record

Collection Date: 7/13/c1 Shipping Date: 27 (14) 15 (

Project Name: 14-7	be=3/4 Project	t No: 0 100-19 -	11 72	Station ID: AN-4169
	DAN HENNESSY DALL DIL	KINSON BAINN 60	0 L 1492	
	IV NAMES AND	Sampling Method:	HYDIGHL	LIC (MEAH)
	DICHANGER (MEG) GARRA			
	/Lat. 47-16 5165N	Weather:	Crows 7	CE WESCH
	/W/Long. 122 23, 2031			
		one:		
Sample Number:	AAV -4 1849		, marine	
Analysis: M	etals / BNAs / VOCs / PCBs / Pest / I	nerb / TBTS / Diox-rutalis	ENRY	1757
	Si/ Gain Size (TOC)/ TVS / Ammonia	a / Suitides		
(0	Circle Appropriate Analyses)			
Field Test Results		Comments	:	
Salinity:	ppt			
Ammonia:	mg/L			
Grain Size:	ml Coarse:	ml Fines:		
	MUDLING = -34,1+	74,09 = -30,0' Mi	un vetil	til 8/19/01 Ken
Grab Number:	Water Depth: <u>34</u> , ا	Penetration Depth	:X	Time: 16.12
Bioassay / Chemistry (d	circle) AVS/SEM; Total Sulfides; V	OC Sample (circle)		1
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	Petott- 77, visett
gravel Sand C M F	gray	slight	Petroleum	10 Jams
sand C M F	black	moderate	other:	,
silt clay	brown	strong		
organic matter	brown surface	overwhelming		
Grab Number: 2	Water Depth: 34.0		: 25cm	Time: 16.22
	circle) AVS/SEM; Total Sulfides; V]
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble يامين خور ا	D.O.	none	H2S)	SHELLS WOUND DEBRIS
cobble gravel	WAY- gray	slight	Petroleum	SHOWT SHOWN
sand C M F	black	moderate	other:	Set Obli
silt (ay)	brown	strong		
organic matter	brown surface	overwhelming		
Grab Number:	Water Depth:	Penetration Dept	n:	Time:
	(circle) AVS/SEM; Total Sulfides; \	/OC Sample (circle)		
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	7
gravel	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
		strong		
silt clay	brown brown surface	overwhelming		
organic matter	Jordani Sullace			<u>-</u> :
Grab Number:	Water Depth: (circle) AVS/SEM; Total Sulfides; Y	Penetration Dept	th:	Time:
		Sediment Odor:		Comments:
Sediment Type:	Sediment Color:		Lac	- Comments.
cobble	D.O.	none	H2S Petroleum	
gravei	gray	alight		
sand C M F	black	moderate	other:	
silt clay	brown	strong		1
1	 	overwhelming		ļ

ANCHOR Surface Sediment Field Sample Record

Collection Date: 7/13/01 Shipping Date:

Project Name: Hy la la	06 3/4 Proj	ject No: Clob-(9-	1172	Station ID: T40A-4
Sampling Crew: DAN	HONNESSY DALL	DICKINSON BRIAN C	CV.Gr	
Sampling Vessel: 2/1		Sampling Metho	d: Hy DICAC	LIC. GRANS
	landon (MEC) GAVER	AL CARRYE		
	1. 47016.5602 N	Weathe	n CLONE 7	F 18 KTSE HIM
	/Long. 122 23.26	791 n		
Datum: NAD 8		Zone:		
Sample Number: T	10 A _U			
Analysis: Motors	S / BNAs / VOCs / PCBs / Pes	t / Herb / TBTs / Diox-Furans		
	Grain Size / TOC/ TVS / Amm		SUC	رج ا
_ <u>`</u>	Appropriate Analyses)	orna / Gamedo		
(Circle	e Appropriate Analyses)			
Field Test Results		Comment	s:	
Salinity:	ppt			
Ammonia:	mg/L			
Grain Size:	ml Coarse:	ml Fines:		
Power	HNE = 735.0 +14	,24= - 30.8 min	· Validata	0 8/19/01 KNM
Grab Number:	Water Depth: 39	Penetration Dept	n: <u>25</u> 2,	n Time: 16:46
Bioassay / Chemistry, (circle	e) AVS/SEM; Total Sulfides	; VOC Sample (circle)		ר
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	Shell fragment crab carapace some weedy do
gravel	re gray	slight	Petroleum	crab curapace
gravel State of Sand	black	moderate	other:	some woody do
sift clay	brown	strong		U
organic matter	brown surface	overwhelming		
Grab Number:	Water Depth:	Penetration Dep	th:	Time:
Bioassay / Chemistry (circle	e) AVS/SEM; Total Sulfides	s; VOC Sample (circle)	<u> </u>	٦.
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	
gravel	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
silt clay	brown	strong		
organic matter	brown surface	overwhelming		
Grab Number:	Water Depth:	Penetration Dep	th:	Time:
Bioassay / Chemistry (circle	e) AVS/SEM; Total Sulfide	s; VOC Sample (circle)		
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	
gravel	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
silt clay	brown	strong		
organic matter	brown surface	overwhelming		
- 35.110 Make	1			
Grab Number:	Water Depth:		oth:	Time:
Bloassay / Chemistry (circ	le) AVS/SEM; Total Sulfide	es; VOC Sample (circle)		\neg -
Sediment Type:	Sediment Color:	Sediment Odor:		Comments:
cobble	D.O.	none	H2S	
gravei	gray	slight	Petroleum	
sand C M F	black	moderate	other:	
silt clay	brown	strong		
organic matter	brown surface	overwhelming		

DD+DPH

Recorded by:_

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, incorporated Analytical Chemists and Consultants 400 Ninth Avenue North Seattle, WA 90109-4700 206-621-6490 206-621-7523 (fax)

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Chain of Custody Record & Laboratory Analysis Request

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Chain of Custody Record & Laboratory Analysis Request

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APPENDIX C

SUBSURFACE SEDIMENT COLLECTION LOGS



(253)597-9569 TACLIMA TIDES
Sediment Core Collection Form

1411 4th Avenue, Suite 1210 Seattle, Washington 98101 Phone 206.287.9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	AN'LT-1	Date:	4-6-6-69
-	WIEBOS 53:4	Project Number:	C18049-11 Ta
Coordinates: Lat/Northing	47 16,5913	Long/ Easting:	122 23,4796
Vertical Datum	MLLW	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	Attempt 1 / CLC	S Attempt 2	/i/49— Attempt 3
(A) Measured Water De	epth	Ku- 34,	7′3火
(B) Tide Height		(auto) 4.5 +	2.36 validates 8/19/01 Ken
(C) Mudline Elevation	Ks~	-32.3 Mul -32. I Mi	13 8/19/01 Run
A+B=C include sign of tide	height(as reported)		
Estimated Penetration	n 3-4'	13 MEDINE	काराहे ।
Refusal Encountered	1? 4' DESTAS	· NC	RUK X
Total Core Length	3.5	13 Sequent A	Similar Land
Core Characteristics	REJECTED		1 11102
Sediment Type	cobble, gravel, sand C M	F cobble, gravel, sand silt clay, organic mat	ter silt clay, organic matter
Sediment Color	gray (<u>Slack)</u> brown brown surface, olivine	gray, Dlack, brown brown surface, elivin	gray, black, brown brown surface, olivine
Seaiment Odor	None, slight, mod, strong	None, slight, mod, st	None, slight, mod, strong tic H ₂ S, petroleum, septic
Any Layering Homogeneous	HomoGENEOUS		
Comments: EACH	RE SECION =	ناني "	
LAST	7' I COPE NOT	RETURNS - NORT	INE SEIZHWANTS CALLY ENTYFIRE SAND BY RED FLECK
	,	DINE PISK IN	ENTINE SOMO WIKED FLEOUR
Recorded by:	mangual	INDICATIVE.	ones dinorial to

Visual Classification of Undisturbed Sample Job HYLERS S 354 7-10-01 Date Sample Pushed By NULLIVE SHIMLING 2 STENO 010046-11 Exploration No. Sample Logged By K. MAGEEDER ⊿ampie No. Shelby Other William ANLT-1 Type of Sample Depth of Sample Diameter of Sample (inches) 5 25 / 12 Sampled Length (feet: from log) 5.5 f Sample Quality 🖾 Good 🖾 Fair Poor Disturbed Sample Recovery (feet) Average % Compaction = CONSISTENC' Size % Represent Sample at Depth Interval Depth Classification and Remarks S Interval (add Feet in Feet Compact.) Max. | Range | (PI) Core Sections SILTY SAND TOP 2 # DISCHROOMS D=1 ひとろうへ MYDEOUTEN STRENDY SULFIDE 1-Little ODORS WHILE 41 MIXING REMOVING WOODY DIDES >1"if BUTON 2" DESCRIPTION 1 LT-1 SECT. A GRAN TEP 2" DISCARDED LTI Meist MED UPFELL HUTTER FINE SONDY SILT \mathcal{B} Culuposite Windy 15-1 BUTTON J"DISCOPEDED WET TOP 2" DISCHEDED SILTY SAUD 34-LITER LTI THEOLIMINET MEIST Composite X PREPORED 11:45 LT-1



1411 4th Avenue, Suite 1210 Seattie, Wasnington 98101 Phone 206.287.9136 Fax 206.287-9131 www.anchorenv.com

Station ID:	1-1001	T - 3-	Date:	7-09-01					
Project Name: Coordinates:	HYLE	RS 5354	Project Number:	CIOCAC-E II TO					
Lat/Northing	<7 '	16.5656	Long/Easting:	132° 23.3786					
Vertical Datum		MLW	MLW	Other:					
Depth Measurement		Sounder	Leadline						
Project Depth			Overdredge						
	Krein	134 Attempt 1 // 3∂	Attempt 2	Attempt 3					
(A) Measured Water	Depth	⁻ 31.9'	`. 	1					
(B) Tide Height		3.0' (+ 0.73 m	Midstal 8/19/07 K	12					
(C) Mudline Elevation	ו	-28.5, MILL	Midsta 8/19/01/20 Min 8/15/01/2	~ \					
ーA+βっこ (A-B = C include sign of tid	de height	as reported)							
Estimated Penetra	tion	13 STUDY TO 16, HOUSE TO 13'							
Refusal Encountered	ed?	No	20	41					
Total Core Length		12.5' SEINA	- SAME ON PAPOR						
Core Characteristic	s	Button	BASE = NOTIVE SU	wos /					
Sediment Type		cobble, gravel, sand S.M.F.	, cobble, gravel, sand C silt clay, organic make						
Sediment Color		gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine					
Sediment Odor		None, slight, mod strong	None, slight, mod, stro H ₂ S, petroleum, septic	- \ \ \ \ \ - \ \ \ \ \ \ \ \ \ \ \ \ \					
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	ied Leng		: from l	ogi .	4.01			-	Same	erel O		inches)	3.95"/D Tair Poor Disturbed
	ie Recov							-	Avera	ge %	Compacti	on =	all Frool - IDISturbec
Ξ				16	<u> </u>		1	- 		i Te		1 -	
Composition	Sample Interva in Feet	an Inte	prosent t Depth rval (ad empact.)	SISTE	MOISTURE	COLOR	G	Size %	F	Theoretical	Depth Feet	ample Sketch	Classification and Remarks
%							Max.	Range		Co	re Sections	S	
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-/	LT2 F	_											HOS = MODERATE
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Station ID:	AWLT-3	Date:	<u>9-09-01</u>
Project Name: Coordinates:	HyLE1305 S 35.4	Project Number:	0048-11 T2
Lat/Northing	27 W. 5594N	Long/Easting:	122 23.2870
Vertical Datum	MLLW>)	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	기타 Attempt 1	Attempt 2	Attempt 3
(A) Measured Water D	epth 35.9		
(B) Tide Height + 115	1.9. [0.13	12 8/19/01 KL	101 Km)
(C) Mudline Elevation	-35, 8 MLL	\$/19/01 KL	
A+B= C (AB = C include sign of tide	height as reported)		
Estimated Penetration	ON 16 STEADY TO 8' HAND TO 16'		
Refusal Encountered			
Total Core Length	10 SECTIONA 1		
Core Characteristics	7:17		
Sediment Type	cobble gravel sand C M F silt clay, organic matter	cobble, gravel, sand (
Sediment Color	gray black, brown brown surface, olivine	gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine
Sediment Odor	None slignt, mod, strong H ₂ S, petroleum, septic	None, slight, mod, str H ₂ S, petroleum, septi	
Any Layering Homogeneous			
Comments: 50110	A F SECTION A - N	ATIVE PLYALLIA	, SAMOS MARINE EDIAMENZO
:			
Recorded by	manual		

b HYLER	s 5 3 049-7/ Ta)<	··	<u> </u>	e 7-/0/		ANCHOR ENVIRONMENTAL LLS
ploration No.	<u>047"// , </u>			Sar	nple Pushed By	MAZIN	E SAMPLING SYSTEMS
	ANLT -3			<u> </u>	upie roddeg by	Shelby	,RUDT≠
oth of Sample					meter of Sample		
	(feet: from log)						air == Poor == Disturbed
imple Recover					rage % Compacti		an con con contract
Sample Interval in Feet	Represent at Depth Interval (add Compact.)	CONSISTENCY	G G Max.	Size %	Theoretical Debth Actual	Sample Sketch	Classification and Remarks
0,			_	Range (P	Core Sections	Se	
3	14	TES PWOIST	5	DILTY SOULD		Track Indian	MO HOU DIDE
		1 march	AND AND AND AND AND AND AND AND AND AND	SAND WED			- Chang layer 1/2 mm Star Genis Cas. Tress
		Daup	DK OKY				FIGHTIS DICLYING STATE WITHIN DESIGNS STATE FROMWELDS STATE THE PROMINGENT STATE THE PROMINGENT STATE THE PROMINGENT STATE THE PROMINGENT STATE THE PROMIN
3 720							SEC. A
		5	50%	72/1			
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Sediment Core Collect	ion Form	
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Station ID:	ANLI-4	Date:	69-09-31
Project Name: Coordinates:	HYERLS 53,4	•	61 CT 49-11 T3
Lat/Northing	270 14.5195	Long/Easting:	1220 23.0764
Vertical Datum	MLLW	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	∕⊇,⊅≤Attempt 1	Attempt 2	Attempt 3
(A) Measured Water [Depth - 31.5		
(B) Tide Height	11167.41	val Retor 8/197	brk 1)
(C) Mudline Elevation	-30,4	11 8/17/0xxx	
(A-B - C include sign of tid			
Estimated Penetrat	1 may - 11	•	
Refusal Encountere	1 1 2		
Total Core Length	12.1 Sea.5	DET-SE - BUTTONE	/ Similar Notice ()
Core Characteristics		· · · · · · · · · · · · · · · · · · ·	
Sediment Type	cobble, gravel, sand 0 M.F.	cobble, gravel, sand C N silt clay, organic matter	M F , cobble, gravel, sand C M F , silt clay, organic matter
Sediment Color	Gray, black brown brown surface, olivine	gray, black, brown brown surface: olivine	gray, black, brown brown surface, olivine
Sediment Odor	None, slight, mod. strong H ₂ S, petroleum, septic	None, slight, mod, stron H ₂ S, petroleum, septic	None, slight, mod, strong
Any Layering Homogeneous			
; : 	m 6' NOT CONTEST	D = AL NATIV	E PLYMACT SHUBS
Recorded by:	-/caprile		

Visual Classification of Undisturbed Sample 354 Date 7-10-61 Job HV/元配了 Sample Pushed By TVPRING SANDLING Job No. 6 165 49 -11 TO xploration No. Sample Logged By K. MASKUTER Imple No. AULT-4 Shelby 又 Other Type of Sample Depth of Sample Diameter of Sample (inches) 3,75" !D Sampled Length (feet; from log) Sample Recovery (feet) Average % Compaction = Composition CONSISTENCY Size % Sample Sketch Represent Sample at Depth Interval Depth Classification and Remarks G S Interval (add in Feet Feet Compact.) Max. Range (PI) Core Sections SOFT FINE SHOU SIFT THEY DISCURSED TP TEDD CHIL CHIME 3-4"TWAVORDIT 14 SUBHT Has LT-4A 4 D ODER THROUGHOUT لاعا ECTION A Sinc LANGE WITH CANNO FIRM2 155L 1-L بسوح DWL LT-WOOD 4B COMPOSITE FIBER 700 GIZY. B - BOTTOM J" DISCOUND LT BEN LT-4 SECTIONSA TET 2 = FIN-Fa = None 1. DID NOT USE SECTION LT-40



1411 4th Avenue, Suite 1210 Seattie, Wasnington 98101 Phone 206.287.9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	EVILT- 5	Date:	17-09-01
Project Name: Coordinates:	HYLEBES STIF		110044-11 7 3
Lat/Northing	47' 16.3726	Long/Easting:	1020 00.844
Vertical Datum	MLLW	MLW	Other:
Depth Measurement	Sounder	Leadline	>
Project Depth		Overdredge	
	1345 Attempt 1	Attempt 2	Attempt 3
(A) Measured Water [3017	\	
(B) Tide Height	1536 -0.6 (-	0.29 volidete	8/19/01/4-)
(C) Mudline Elevation	-31.3 min	P 8/19/01 Ke	
ーハ+B=C 			2
Estimated Penetrati	FAS. T. C.	\\	
Refusal Encountere		SUFFU SOME	
Total Core Length	10.3 Sec	A - GK SHIPY STATE K B - SHIP BUT TO SILLY SHUD TO	1
Core Characteristics	•	SILLY SHUD TO	P
Sediment Type	cobble, gravel, sand C M F silt clay, organic matter	cobble, gravel, sand C	
Sediment Color	gray, black, brown brown surface, blivine	gray, black, brown brown surface, olivine	
Sediment Odor	None, sligh, mod, strong	None. slight\mod, str H ₂ S, petroleum, septi	
Any Layering Homogeneous			
Comments: Nation	TO POUNT SHURLY	Bevon (c.	
Recorded by:	makuser		

b N	<u> 1/12-15005</u> 0. 01.00	<u>5 = 5</u>	54- Ta-				-		9-11		·1.15.2	ANCHOR ENVIRONMENTAL LIS
	ration No.		, <u>. </u>				-	Samo	le Logg	ied By	124-11-	E JAJUE IND WIEW
	ie No.	ANLT -	5				-		of Sami		Snelb	y 内 Other MBANCA
	of Sample						-	Diame	eter of S	Sample (ir	nches	5.95" ID
		(feet: from lo	g)				-					air — Poor — Disturbed
amp	ie Recovery	/ (feet)					-	Avera	ge % C	ompactio	n =	
<u> </u>		Represent	<u> </u>				Size %		- Sa		T =	
Composition	Sample	at Depth	CONSISTENC	RE			1		Theoretical	<u> </u>	Sample Sketol	
	Interval in Feet	interval (add	SIS	MOISTURE	R.	G	S	F	The C	Pepth Telegraphic	9 <u>e</u>	Classification and Remarks
کّ ا	1111 661	Compact.)	NO.	018	COLOR	May	Range	(PI)	, .	-	dure	
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1411 4th Avenue, Suite 1210 Seattie, Wasnington 98101 Phone 206.287.9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	ANLT - G	Date:	19-29-21
	HUERIS SSIA	Project Number:	1 CIN 49-11
Coordinates: Lat/Northing	97' 16.3525	Long/ Eacting :	192 32.756
Vertical Datum	MLLW	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	ا Attempt 1	Attempt 2	Attempt 3
(A) Measured Water D	epth -31.5		
(B) Tide Height	- O.L. (0,4)	Valadated 8/1	9/01 Ken
(C) Mudline Elevation	-32.T MLW	L 31 10 1001 441 -	
ーA+BュC (A-B = C include sign of tide		7,1,0,1	
Estimated Penetration	TELIN T		
Refusal Encountered	1		
Total Core Length	8.2 SECT B	3 SHTY SAND NEW MINIST 3 SHETY SHANC	The state of the s
Core Characteristics		<u> </u>	NEGUE
Sediment Type	copble, gravel, sand o MF	cobble, gravel, sand C	, , , , , , , , , , , , , , , , , , , ,
Sediment Color	gray/black, brown / cws/ brown surface, olivine	brown surface, olivine	gray, black, brown brown surface, olivine
Sediment Odor	None/slight, mod, strong	None, slignt, mod, stro H₂S, petroleum, septio	
Any Layering Homogeneous			SECTION
Comments: Top	1	المناو به المنادة	13 = NAUVE DOYALLYS
Recorded by:	Manuden		

	iop N	0 111	5 . 5 3 30 49 - 1						Date	7	- 11 - D)	^	
		ration No.	20 249 - 1	<u>, c</u>					Same	le lo	gged By	MACIN	a SAMPLINI: SUSTEMS
,		ie Nc.	ANLT-	· <i>\(\varphi \)</i>			M			of Sa		□ She	Iby Other VIBRACINE
ĺ	Depth	of Sample	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7								f Sample		
Sampled Length (feet: from log)									Samo	ie Qu	ality 🗀 🤇	Good _	Fair Poor Disturbed
5	Sample Recovery (feet)								Avera	ige %	Compac	tion =	
	Composition	Sample Interval	Represent at Depth Interval (add	CONSISTENCY	URE	~	G	Size %	F	Theorelical	Depth Feet	Sample Skelch	Classification and Remarks
	% Con	in Feet	Compact.)	CONS	MOISTURE	COLOR		Range		'	Feet <	Sample	
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Station ID:	AWLT - 7	_ Date:	19-09-01
Project Name: Coordinates:	HAMEBER 23 /4	,	C10049-11 75
Lat/Northing	17° 16.3059	Long/ Eastin g:	189° 22.7507
Vertical Datum	MLLW		Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	1454 Attempt 1	Attempt 2	Attempt 3
(A) Measured Water I		1	
(B) Tide Height	1992 - C. 2 (41.5	to Walidated 8/	19/0/Kpa)
(C) Mudline Elevation	- 22.1 20.	+ mun	
ーイャラミン (A-B = C include sign of tic	de height as reported)	8/19/0/Km	
Estimated Penetrat	ion 12' EXT CT HEN		
Refusal Encountere	101 31411 10 132	, 3	
Total Core Length	11.8' SECT A	SELVEDOD NODES HOSE	i.Tu
Core Characteristics	s D	19-11.0 Has hall	LOTED HOUSE (LECTE) WORKED W/SONG
Sediment Type	cobble, gravel, sand C M i	cobble, gravel, sand C M silt clay, organic matter	F , cobble, gravel, sand C M F , silt'clay, organic matter
Sediment Color	gray black brown brown surface, olivine	gray, black, brown brown surface olivine	gray. black, brown brown surface, olivine
Sediment Odor	None, slight, mod, strong	None, slight, mod, strong H ₂ S, petroleum, septic	None, slight, mod, strong
Any Layering Homogeneous	TAKELIME		
Comments:			
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Recorded by:	many	2	

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И ас юіаў	o. ration	010 No.	D 46	i- j;	- F				- - -	Samo	ie Pu ie Lo	isned By gged By	λ	1 DE, A	VE SAWYIND STEM
Jample No. HRLT - F Depth of Sample Sampled Length (feet: from log) Sample Recovery (feet).									- - -	Type of Sample Shelby Other VIBRO CORD Diameter of Sample (inches) 3.75 "ID Sample Quality Good Fair Poor Disturbed Average % Compaction =					3.75 " ID
% Compositon		nple rval eet	at D	al (add	CONSISTENCY	MOISTURE	COLOR	G	Size %	F (PI)	Theoretical	Depth Feet	Actual	Sample Sketch	Classification and Remarks
	,		1		moisi M den	- A	_ Bik		Seeu			re Sectio	ns	S	Discount 2" Kanto/Antos
l つ		17	1. te	 £				1 1 1 1 1 1	Mid Sa	(fid	iai.				Earl Fibres legal Fire Sundy Silt
ت .					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	······································							2		Lecond debis - They Fibres Discard 2"
フ - 上		LT	7 <i>6</i>		Soft		D.Gr	TF	San	y.5.1			ا د		Discard 21 Woody Debris Wood/Barle to 3" Pin medles to 3
5		1,	Q;H	ń				H	i gh		NC			Mr.	14. Gray Clayer loyer one vessely with alepth , lots
8						. 0.8.6						-		¥.	fibrois untile
7	17	70			School	(LOC)	D. Bro	,	DE -17	ſ	Jes.		+		Horse fall wood Notice fall wood Notice Plant Horse
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3					motor	÷	N Brown	12	10				\$		Broscard 2
- ;	, L	17.12			m Light	É.	B-70	12	000	.t	ar.		r o Mati		1 2000 - 2000 5 12 12 100 100 100 100 100 100 100 100 1



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Station ID:	AN	T- Z		Date:	19	- 04-61
Project Name: Coordinates:	HYLEBL	<u>s s</u> =	354	Project Numi	per: <u>()</u>	<u> 49-11 To-</u>
Lat/Northing	47	16.3204	11	Long/Easting.	12	2 22 6937 60
Vertical Datum		MLLW		MLW	Oth	er:
Depth Measurement		Sounde	r	Lead	dline	
Project Depth				Overdredge		
	15.	⊋ ⊃ Attemp	ot 1	Attem	pt 2	Attempt 3
(A) Measured Water	Depth	-3 3 .9				
(B) Tide Height):	504 0.	? (+2.9	11 Walistates	d 8/19/0	****
(C) Mudline Elevation)	-35-	MULL!	31.0 MOLW 8/19/01/4		
ーAnB = C (A-B = C include sign of tid	de height as	reported)	RUS STATE			T
Estimated Penetrat	ion /	2'	CASY THE	€ \		
Refusal Encountere	ed?	Vī	STIFF TO)			
Total Core Length	,	6.91	ECA-	-3' SIFTY FIRE	e Sinin w/a	es lourse
Core Characteristics	s		SEC 3-	3' EMD = No	MINE PUYE	Carry Stylles
Sediment Type		cobble, gravel, silt clay, organi	sand CMF	cobble, gravel, silt clay, organ		cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	i	gray, black(brobrown surface.	olivine	gray, black, br brown surface		gray, black, brown brown surface, olivine
Sediment Odor		None sligh m	nod, strong n, septic	None, slight, n H ₂ S, petroleun		None, slight, mod, strong H ₂ S, petroleum, septic
Any Layering Homogeneous						:
Comments: R	157_ (· - /.	NTIVE 7	Prysour S	enb),	
Recorded by:	177	7 <u>5</u> 50	met -			

Job N Job N Explo Amo Deptr Samo	HULE BO IO. CID Iration No. Die No. AND Tof Sample	(feet: from lo	72	Jna		Dai Sar Sar Tyc Dia Sar	nple P nple Lope of S meter nple Q	ushed By pogged By ample configuration	Shelb iches)	ANCHOR SAMPING SYSTEM V Other V, REACHE S.FS ID Fair Poor Disturbed
% Composition	Sample Interval in Feet	Represent at Depth Interval (add Compact.)	CONSISTENCY	COLOR	G	Size % S F Range (P	- F	Depth Ret V	Sample Sketch	Classification and Remarks
		-5A	Good Wash	y h		5,14,5.			e, c	- wood piece e" - Balle of clay approx 1" hatime with - Discard
						2 - 7 7 3 (



1411 ^{4th} Avenue, Suite 1210 Seattie, Washington 98101 Phone 206.287.9130 Fax 206.287-9131 Www.anchorenv.com

Station ID:	AN- HY- 14	Date:	7/10/01
Project Name:	Hylebes 538	Project Number:	010049-11 T
Coordinates: Lat/Northing	47" 16 5835	Long/Easting:	122 23.3519
Vertical Datum	₩III	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	14 20		
	Attempt 1	Attempt 2	Attempt 3
A) Measured Water D	Depth -30.8		
(B) Tide Height	+ 0.5f	. (+ 0.74 (Valid	tal 5/19/01 Ku)
(C) Mudline Elevation	-30-3 F	7 -30.1 kmin	8/19/61 Kan
A-B = C include sign of tide	e height as reported)		<
Estimated Penetrati	on - 12.5f		
Refusal Encountere	d? YES		
Total Core Length	-11.5		JOH SIT FIRE WALK DIRM COMPAND SAND
Core Characteristics		C TOP R	d fleck sand compre
Sediment Type	cobble, gravel, sand)C	cobble, gravel, sand C silt clay, organic matte	
Sediment Color	tray(black, brown brown surface, olivine		gray, black, brown brown surface, olivine
Sediment Odor	None slight, mod, stro H ₂ S, petroleum, septio	ong None, slight, mod, stro	ng None, slight, mod. strong H ₂ S, petroleum, septic
Any Layering Homogeneous	COMPACE CA	And I	:
TO PENET	PER KIM MAG RATEN OF PUY KIM WAS EXH	PUDER LE CUIT VALLUP SANO! IBITED AT THE BC	HATIVE MATERIAL PER OF SEZTION B

Vis	ual (Cla	ssif	icat	ion	of l	Jnd	istu	rbed	l Sa	mple	Ą.	2 ANCHOR
эb	11 - 1-	har	<u>. S</u>	3 -4					•	Date	7/11/31		ENVIRONMENTAL CLIC
lob N	o <u>6</u> /	009	19-11	- 7 2							le Pushed By	LY. A.	Sampling Sylveni
	ration N		n v		/ 						ie Logged By	56/4	•
()	le No. of San	nnie.	N 4 +	- 14					•			Shelb	
amp	led Len		feet fr	om loc	n) /				•		eter of Sample (included)		3.75" ID
amp	le Reco	overy	(feet)	011110	ور) (5				•	Avera	ge % Compaction		air Poor Disturbed
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Composition	Sam	nlo	Repr	esent	CONSISTENCY				Size %		Theoretica table to the table	달	
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Sediment Core Collection Form Station ID: Project Name: HYLERCS 53 \$4 Project Number: Coordinates: Lat/Northing 14.4377 Long/Easting: MILLAD MLW Other: Vertical Datum Depth Sounder ⊈eadline Measurement **Project Depth** Overdredge 4:00 Attempt 1 Attempt 2 Attempt 3 (A) Measured Water Depth (B) Tide Height (C) Mudline Elevation (A-B = C include sign of tide height as reported) Estimated Penetration Refusal Encountered? Total Core Length **Core Characteristics** Sediment Type cobble, gravel, sand C M F cobble gravel, sand C M F , cobble, gravel, sand C ME silt clay, organic matte Silt clay Jorganic matter silt clay, organic matter Sediment Color gray, black, brown, grav. black) brown brown surface, okyme gray, black, brown, prown surface, olivine brown surface, privine Sediment Odor None, slight mod, strong None, slight, mod, strong None, slight, mod, strong H₂S, petrofeum, septic H₂S, petroleum, septic H2S. petroleum, septic Any Layering Homogeneous Comments: - 1/57 Circ CABLE ALTEMO CAST Recorded by:

b No. 10.249-11 Apploration No. Apple No. 144-3 Ath of Sample Ampled Length (feet: from lown of the sample of the sample) Apploration No. 10.44-3 Apple No. 10.	g)	Sar Sar Typ Dia San	imple Pushed By pe of Sample Shelby Other Character ameter of Sample (inches) mple Quality Good Fair Poor Disturbed erage % Compaction =
Sample Represent at Depth Interval (add Compact.)	NS OIS	Size % G S F Max. Range (PI	F Feet V Tau
	VS. of Post College Co	54.5 35-5	Engant Si = w/sul



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Station ID:	TIC	DA-1	Date:	7110	101		
Project Name:	Hyic	: bos 5384	Project Number:	01-0	0049-11		
Coordinates: Lat/Northing	47	16.6081	Long/Easting:	122 2	3-4569		
Vertical Datum		MEDA	MLW	Other:	•		
Depth Measurement		Sounder	Leadine				
Project Depth			Overdredge				
		Attempt 1	Attampt 2		A441 0		
		Attempt	Attempt 2	1	Attempt 3		
(A) Measured Water D	epth	-34.5	nie	to /	CAMB		
(B) Tide Height		+0.47	1+1.4L/8/19/01	Ke /)			
(C) Mudline Elevation		-34.17	-33.0' Myw	8/19/16/K			
(A-B = C include sign of tide	height a	s reported)					
Estimated Penetration		11 tr ccm					
Refusal Encountered	d? (/	Vo Lang Comb	4ND				
Total Core Length		11 fg SEZ	A 0-3				
Core Characteristics							
Sediment Type		cobble, gravel, sand C M F silt clay, organic matter	cobble, gravel, sand C silt clay, organic matte	MF, cobble,	gravel, sand C M F , , organic matter		
Sediment Color		gray black brown brown surface, olivine	gray, black, brown brown surface, olivine	1 7	ack, brown surface, olivine		
Scdiment Odor		None slight, mod, strong H ₂ S, petroleum, septic	None, slight, mod, stro H ₂ S, petroleum, septio		slignt, mod, strong stroleum, septic		
Any Layering Homogeneous		YES FINES A TOP TO SAND LEDGICK CO		:			
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osition	Sample	Represent at Depth	TENCY	RE			Size %		Theoretical	Depth E	Sketch	Oleanification and Develo
% Composition	Interval in Feet	interval (add Compact.)	CONSISTENC	MOISTURE	COLOR	G Max.	S Range	F (PI)	'	Depth Feet V	Sample Sketch	Classification and Remarks
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www.anchorenv.com **Sediment Core Collection Form** Station ID: Date: Project Name: **Project Number:** Coordinates: 10.5700 Lat/Northing Long/Easting: MLLW MLW Other: Vertical Datum Depth Leadline Sounder Measurement **Project Depth** Overdredge 11:000 Attempt 1 Attempt 2 Attempt 3 (A) Measured Water Depth (B) Tide Height (C) Mudline Elevation (A-B = C include sign of tide height as reported) Estimated Penetration MR Refusal Encountered? No SEZOCIUS Total Core Length 17 A, B, C, &D Core Characteristics Sediment Type cobble, gravel, sand C ME cobble, gravel, sand C M F, cobble, gravel, sand C M F. Silt clay, organic matter silt clay, organic matter silt clay, organic matter Sediment Color gray)black, brown gray, black, brown gray, black, brown erown surface, olivine brown surface, olivine brown surface, olivine Sediment Odor None slight, mod, strong None, slight, mod, strong None, slight, mod, strong H₂S, petroleum: septic H₂S, petroleum, septic H₂S, petroleum, septic *CANSITICAL* Any Layering Homogeneous Comments: STIFICE meeterin ut ubint Recorded by:

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Sediment Core Collection - EAR

Sealment (-ore	Collection	Form So	AREX TIME	= 8 20°
Station ID:	TI	tA-Le	Date:	7/10	0 01
Project Name: Coordinates:	Hyle	mes 53 <u>84</u>	Project Number	: <u>citoo</u>	49-11 TZ
Lat/Northing	′	47 16 5584	Long/Easting:	122 2	3.4099
Vertical Datum		MLLW	MLW	Other:	
Depth Measurement		Sounder	Leadlin	è	
Project Depth		9.18	Overdredge		
		Attempt 1	Attempt 2	2	Attempt 3
(A) Measured Water I	Depth	-15.8	ms		
(B) Tide Height		+ 8.7ºfa	15 (+7.12' Valid	Cated 8/19.	101Ken-8
(C) Mudline Elevation		-13-5 F	- 8,7' min 8	8/19/01 Ke-	-/
(A-R = C include sign of tid	le height	as reported)		/	
Estimated Penetrat	ion	125 fr			
Refusal Encountered	ed?	YES DESER			SWE
Total Core Length		5000 10.3 Fr	KAUS AB, CAD		
Core Characteristics	5	sur TD ea	(NO		
Sediment Type		cobble, gravel, sand C I silt clay organic matter	M F , cobble, gravel, sar		ole, gravel, sand C M F , slay, organic matter
Sediment Color		gray black; brown To brown surface, olivine	gray, black, brown brown surface, oliv		, black, brown n surface, olivine
Sediment Odor		None, slight, mod) stron	None, slight, mod. H ₂ S, petroleum, se		e, slight, mod, strong petroleum, septic
Any Layering ————————————————————————————————————		TO SAMOL	1 Rect flecks	:	
Comments: NO.	uen Leas	schilly ord	2 HAVE HIT	DES, And	מייטעה של
Recorded by:	mr	<u> </u>			

Visual Classification of Undisturbed Sample 71-1-10-10- 5 3+4 = 1.1= Sample Pushed By 010049-11 72 Marine Jumpie Justin Exploration No. Sample Logged By ampie No. Type of Sample Shelby 🙀 Other Depth of Sample ? 75" Diameter of Sample (inches) Sampled Length (feet: from log) Sample Quality XGood Fair Poor Disturbed Sample Recovery (feet) Average % Compaction = Composition Sample Sketch Size % Represent Sample MOISTURE at Depth CONSIST Interval Depth Classification and Remarks Interval (add in Feet Feet Compact.) Max. Range (PI) Core Sections حيوه مدانوس ، د. ي - 0 mg more) 5-10 98-95 Cigaric Silt w/ sund Vactor was Diouis weed Debits - 60% By volume +17 17 b Moderate 10 Heavy 2 F-c Sundwis, /t MARCEM wet Black 50 40 10-20 اكريجات TIPAL Organic Silt W/Sante Just 6-15 85-75 Wood Depis + 40 50% 77,51 wit 10 Block Molerate to Henry Smith El SOFT Clay with S, It, Trace In to wet away \$117AL 45 75-100 C wood layer 5. 3' Chand form F-c Sand wish Dense wet Break 85.95 \$5.45 117/AL SIF LANGES Two at 9.9 7



1411 4th Avenue, Suite 1210 Seattle, Washington 98101 Phone 206.287.9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	T10, A-4	Date:	1900/01					
Project Name: Coordinates:	4 LANS S384	Project Number:	10049-11 TZ					
Lat/Northing	47 10 5380	Long/Easting:	22 23.3515					
Vertical Datum	MLLW		ther:					
Depth Measurement	Sounder	Leadline						
Project Depth		Overdredge						
	10:18 Attempt 1	Attempt 2	A44					
	Attempt	Attempt 2	Attempt 3					
(A) Measured Water [Depth - 21.4 fr							
(B) Tide Height	+7.1 (+5.2	5 validated 8/19/0	(Ken)					
(C) Mudline Elevation	-14.3 fr-11	0.2' MULL	W.					
A-B = C include sign of tide	e height as reported)	2111011	\					
Estimated Penetrati	on 13.5							
Refusal Encountere	d? No							
Total Core Length	12.29	4 SEZTIONS						
Core Characteristics			MATERIAL GOTT					
Sediment Type	cobble, gravel, sand C ME	cobble, gravel, sand C M F silt clay, organic matter						
Sediment Color	gray) black, brown brown surface, olivine	gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine					
Sediment Odor	None, slight, mod strong	None, slight, mod, strong H ₂ S, petroleum, septic	None, siignt, mod, strong H ₂ S, petroleum, septic					
Any Layering Homogeneous	YES AND SILTY AND Debas to NA	: : :						
Comments:	ICAMNY WAS C		DOELGINAL					
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Project Name: Coordinates: Lat/Northing 47 !L 54 Long/Easting: 122 23 7 Vertical Datum Depth Weasurement Project Depth Overdredge 13:3:1 Attempt 1 Attempt 2 Attem A) Measured Water Depth	332
Vertical Datum Depth Weasurement Project Depth A) Measured Water Depth B) Tide Height C) Mudline Elevation AB = C include sign of tide height as reported) Estimated Penetration Refusal Encountered? Core Characteristics Sediment Type Cobble gravel, and CMF silt clay, organic matter Sediment Color Sediment Color Core Characteristics Sediment Color Sediment Color Core Characteristics Sediment Color Sediment Color Core Characteristics Sediment Color Sediment Color Sediment Color Sediment Color Sediment Color Sediment Tope Core Characteristics Sediment Color Sediment Tope Core Characteristics Sediment Color Sediment Color Sediment Tope Core Characteristics Sediment Color Sediment Tope Core Characteristics Sediment Color Sediment Color Sediment Color Sediment Tope Core Characteristics Sediment Tope Core Characteristics Sediment Color Sediment Tope Core Characteristics Sediment Color Sediment Tope Core Characteristics Sediment Color Se	
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Project Depth Overdredge Attempt 1 Attempt 2 Attem A) Measured Water Depth B) Tide Height C) Mudline Elevation A-B = C include sign of tide height as reported) Estimated Penetration 12.5 Ft Core Characteristics Sediment Type Comparison of tide to the comparison of tid	pt 3
Attempt 1 Attempt 2 Attem A) Measured Water Depth 3 1. 2 B) Tide Height 1. 0 1 10 10 10 10 10 10 10 10 10 10 10 10	pt 3
Attempt 1 Attempt 2	pt 3
A) Measured Water Depth 31.2 B) Tide Height 1.0 ft (to, 35 Milliotta) 2 ff (t) Km C) Mudline Elevation 33.7 Milliotta) 2 ff (t) Km A-B = C include sign of tide height as reported) Estimated Penetration 12.5 ft Refusal Encountered? Fotal Core Length 10.0 ft A,6 Core Characteristics Sediment Type cobble gravel, and CMF silt clay, organic matter silt clay, organic matter silt clay, organic matter gray, black, brown gray, b))
B) Tide Height C) Mudline Elevation AB = C include sign of tide height as reported) Estimated Penetration 12.5 ft Core Characteristics Sediment Type Cobble gravel, sand CMF, silt clay, organic matter Cobble gravel, silt clay, organic matter Cobble gravel, silt clay, organic matter Gediment Color Gravelage brown Gravel, bro	
C) Mudline Elevation A-B = C include sign of tide height as reported) Estimated Penetration 12.5 ft Refusal Encountered? Total Core Length Core Characteristics Sediment Type Comparison of tide height as reported of the height as reported of t)
A-B = C include sign of tide height as reported) Estimated Penetration 12.5 Ft Refusal Encountered? Fotal Core Length Core Characteristics Sediment Type Comparison of tide height as reported of the height as reported	
Refusal Encountered? Fotal Core Length Core Characteristics Sediment Type Cobble gravel, sand CMF, silt clay, organic matter Sediment Color Gravelage brown Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter Gravel, sand CMF, silt clay, organic matter	
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cotal Core Length Core Characteristics Sediment Type Cobble gravel, cand CMF, cobble, gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter Cobble gravel, sand C M F, silt clay, organic matter	
Core Characteristics Sediment Type Cobble gravel, sand CMF, silt clay, organic matter Cobble gravel, sand CMF, silt clay, organic matter Sediment Color Gray black, brown Gray, black, brown	<u></u>
Sediment Type cobble gravel, cand CMF, cobble, gravel, sand C M F, silt clay, organic matter silt clay, organic matter Sediment Color gray, black, brown gray, black, brown gray, black, brown gray, black, brown gray, black, brown	
cobble, gravel, sand CMF, silt clay, organic matter silt clay, organic matter silt clay, organic matter silt clay, organic matter gray, black, brown gray, black, brown gray, black, brown gray, black, brown	
cobble, gravel, sand CMF, silt clay, organic matter silt clay, organic matter silt clay, organic matter silt clay, organic matter gray, black, brown gray, black, brown gray, black, brown gray, black, brown	
gray, black, brown gray, black, brown gray, black, brown gray, black, br	
SAM WAPPHONE	
Sediment Odor None, slight, mod, strong H ₂ S, petroleum, septic None, slight, mod, strong None, slight, mod, strong H ₂ S, petroleum, septic H ₂ S, petroleum	
Any Lavering - YES The	
Homogeneous TO CAND WO WAST	
Comments: AT BA WIT hard parch pener	Timen
Slowing propless very sum penetration Hard	
MATERIAL FROM 6 to 109. AT 39 SAN HOTE	PAY
STAND IS RED FLICK COLLEGE 2-67 addition	PARK - comp

Vis	sual Cla	ssificat	ion	of l	Jnd	istu	rbed	i Sa	mple	4	* ANCHOR
Job	Harris	K : 40						Date	F. Hile!	`	- ENVIRONMENTAL
Job 1		44-1							le Pushed By	14. 5	ne Sumprime Services
XDIC	oration No.		`				•			ر برور ج سام	3.77.
ami	oie No. 🕌	20H-5								Sheib	y ∭ Other <i>U.</i> n.s.co
	h of Sample							Diam	eter of Sample (in	ches)	8 35° Z)
	bled Length i		g) 💪					Samn	le Quality 📈God	nd 🗀 F	air Poor Disturbed
Sam	ple Recovery	(feet)	1.1					Avera	ge % Compaction	1 = /	-25-
ition	Sample	Reprosont	ENC.	Ш			Size %		etical	eich	
% Composition	Interval in Feet	at Depth Interval (add	CONSISTENCY	MOISTURE	COLOR	G	S	F	Theore Theore Actual	Sample Skelch	Classification and Remarks
○ %		Compact.)	100	MO		Max.	Range	(PI)	Core Sections	Sam	
			V50#	wet	Bluck		10-20	४० पर	- - -		organic Silt Wished
-	720 A SA						15-25	75-85	- 1		consults Tuncase som
- SE 2 T I			Mūrnk	wet	elark gras Rotk	k s	60.80	2040	2		Sily for Sand Shells & Shell Fragments ~ 20% by volume
1524	1. T20H								- 3		by volume
7	- SB								-		
<u>-</u> -3 -6									<u> </u>		5-1-4 5-14 at 4.0
- LT									<u></u>		Shells electricate to
52 B											
						,			-6 E.		
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- - -				V		7/	11/0,		-		
-											
F											





Sediment Core	Collection I	Form Sma	DME 12'05
Station ID: [2]	A-2	Date:	7/10/01
Project Name: Live Coordinates:	EROS S344	Project Number:	11 UCUS-11 TZ
Lat/Northing 47	10.5249	Long/Easting:	22° 23. 2484Ai
Vertical Datum A?	MLLW) 5250	(her: 22° 23, 2442
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	12:06	12.48	
	Attempt 1	Attempt 2	Attempt 3
(A) Measured Water Depth	-27.1	- 27.0	
(B) Tide Height	+ 3.5	+2-1 (+0,74	Pinus 8/19/01/Kg
(C) Mudline Elevation	- 2 3.6	-25.5 - 26	9'mun 8/9/01K
(A-B = C include sign of tide height	as reported)		
Estimated Penetration	13 A	135-	
Refusal Encountered?	No	No	
Total Core Length	MOTACLE PTED	12.2 fr 56	ZIVAS AIBIC
Core Characteristics	Cy	lvŘ	
Sediment Type	cobble, gravel, sand CM F silt clay, organic maxier	cobble, gravel, sand OMF, silt clay, organic matter	cobble, gravel, sand C M F , silt clay, organic matter
Sediment Color	gray, black, brown brown surface, olivine	gray, black, brown Tobrown surface, olivine	gray, black, brown brown surface, olivine
Sediment Odor	None, slight, mod, strong H ₂ S, petroleum, septic	None, slight, mod, strong H ₂ S, petroleum, septic	None, slight, mod, strong H ₂ S, petroleum, septic
Any Layering Homogeneous		YES = FINS Ha Have CEMPA SHAPE IN RETO	cī Glāka
3 was Through	_	cive. Dip Not	excited the REZOVER Enough Attempt
Recorded by:	is seed that	SAME CONFO	TOOL U-9FT 1)

Visual Classification of Undisturbed Sample Hulebra 5324 Date 7/1/67 C10049-11 T2 Job No. Sample Pushed By Exploration No. Sample Logged By ampie No. Type of Sample Shelby Other Depth of Sample Diameter of Sample (inches) Sampled Length (feet: from log) Sample Quality MGood Fair Poor Disturbed Sample Recovery (feet) Average % Compaction = CONSISTENC Size % Skelch Represent Sample MOISTURE at Depth Interval Depth F Classification and Remarks SO. G S Intervai (add in Feet Feet Compact.) Max. Range (PI) Core Sections worms to 0.8 wcf 5-10 UsoH Bluck 90-75 Malerak to Strong Sulfar ador 1A-2A wood chips throught 452 by volume wood layer - of mick at 2.51 In woodchunk Shell frags at 2.6 3 net Bind Fic sundiciples, 1+ Wirdfilling 80-40 10-20 White Rounded "Shell Frags"? 4.65-4.70 in Lance match 18 April Frag \$ 5.1-5.7 Mdessa Snell framments 50 mells ~ 20% by where 8.3.



1411 ^{4th} Avenue, Suite 1210 Seattie, Washington 98101 Phone 206.287.9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	T22A-2	Date:	7/11/01
Project Name: Coordinates:	Hyleres S384	Project Number:	(t) - touy - 11 7
Lat/Northing	47° 16 4582	Long/Easting:	122° 22.9048
Vertical Datum	MILW	MLW	Other:
Depth Measurement	Sounder	Leadline	
Project Depth		Overdredge	
	10: 15		
	Attempt 1	Attempt 2	Attempt 3
(A) Measured Water		, · · ·	
(B) Tide Height	+ 7.9 fr	46.72' Validat	in 8/19/101)
(C) Mudline Elevation	-31-6	-328 minus	8/19/01 Ka/
A-B = C include sign of tid	de height as reported)		
Estimated Penetrat	ion 12 7 12 8	56	
Refusal Encountere			
Total Core Length	12.49		Cinit
Core Characteristic	s		
Sediment Type	cobble, gravel, cand C M silt clay, organic matter	cobble, gravel, sand C	
Sediment Color	gray black, brown brown surface, olivine	gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine
Sedimont Odor	None-slight, mod. strong H ₂ S, petroleum, septic		3
Any Layering Homogeneous	YES TOP FINCS COTTON		Cmg
Comments:	SC A 0-39	, TUP BLACK	fines BOTTON
-	,	CIKAY SAT	NO WRED FLEZKS

Depth Samp	lo	(feet; from lo					•	Type Diame	le Pusheo le Logged of Sample eter of Sar le Quality ge % Con	By / By — — mple (index)	Shelby ches)	
% Composition	Sample Interval in Feet	Represent at Depth interval (add Compact.)	CONSISTENCY	MOISTURE	COLOR	G Max.	Size % S Range	F	Theoretical Core Se	et Ö	Sample Sketch	Classification and Remarks
NEST JOR A	TaA-		(`3.₹1	hasi/	Bind		5-15	<i>.</i> 577 5	-	- (- C		Silt Wisand Lorins to Cis' Syranic/pint potent is marrix - 3-47334 Total Volume
NE VIET B	Tara	7	per a street	4	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		20-40 25-45	نتر∼ه ۲		-3 -4	E	Silvy for M Sand for a Sand and 51/4 frathe on 252 4000 Silvy for Mijand. Simple france on 252 An one to 4.51 One sand denses Min silve anyeas
							6/2	7	12/91	-		



1411 ^{4th} Avenue, Suite 1210 Seattle, Washington 98101 Phone 206.287,9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	AN 321	_ Date:	7 11/01
Project Name: Coordinates:	HYLEBOS 5 584	_ Project Number:	01-0049-11 T
Lat/Northing	470 110-4444	Long/Easting:	122° 22.9257
Vertical Datum		MLW	Other:
Depth Measurement	Sounder	eadine	
Project Depth		Overdredge	
	<u>역 2 등</u> Attempt 1	A44	
	Attempt 1	Attempt 2	Attempt 3
(A) Measured Water [+ 75. W TT		
(B) Tide Height	+ 8.45+ (-	+7.64' Melidate	Q 8/19/01Ka-)
(C) Mudline Elevation	-35 TA-	36.0'MUN 8	(8/19/01Ka-) 119/01 Kam
A-B = C include sign of tid			
Estimated Penetrati	on 11.5 fg		
Refusal Encountere	as VES		
Total Core Length	10.9 fg 5	B 3-10	
Core Characteristics			
Sediment Type	cobble gravel, and CM F	cobble, gravel, sand C N silt clay, organic matter	## Cobble, gravel, sand C M F , silt clay, organic matter
Sediment Color	gray black brown brown surface, olivine	gray, black, brown brown surface, olivine	gray, black, brown brown surface, olivine
Sediment Odor	None slight, mod, strong H ₂ S, petroleum, septic	None. slight, mod, stron- H ₂ S, petroleum, septic	g None, slight, moa, strong H ₂ S, petroleum, septic
Any Layering Homogeneous	VES Flown BIACKGER FINES TO CRAW ROLFE		
		ETHING HARD	<u> </u>
Comments: AT			PUYALLESAND/NATIVE

ob	fich in	5 5	Ų				_	Date	7	1/2/01		2 ANCHOR
ob N		CC45, 11					_			ushed By 🎢		Sompling Commi
	ration No. le No.	かっシエ								ogged By	سرس ز	
	of Sample	316 3 2-1					-				Shelb	
		feet; from lo	٦\				-	Same	10.0	of Sample (in	icnes)	y yr Ib
	le Recovery		9/				-	Avera	re Q	uality ⊠Goo 6 Compaction	00 15	air Poor Disturbed
							·	717010		Octribaction	· —	
Composition	Sample	Represent at Depth	CONSISTENCY	3E			Size %	,	relical	=	ketch	
Sompo	Interval in Feet	Interval (add Compact.)	NSIST	MOISTURE	COLOR	G	S	F	Theor	Depth Feet V	Sample Sketch	Classification and Remark
%	7	Compact.)	CO	Q W	CO	Мах.	Range	(PI)	Cc	re Sections	Sam	
			$v_{i,i}$	c.d	Mack		15-20	89-90				Sindy with poor said fragments with fragments fragments King and King
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3 H 4 P			gy deugk	uet	Gind.		60-70°	some		- 2		Sand Alternating luners
2 4	7		MON	wit	Black of paid		\$2.42	5-15				FCS-S. w/silt
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(J. (¥. C)			Evano	wet	Blow		70-80	20-10		<u> </u>		For City Sall Veg. mater interior in
1-1-1-2			اطلادكم	ω¢ [±]	Break insperio Ai caka		85-95	5-15		-5		Soil Marion. Shalls at 3.95, 4.2 BF-CSIND Shall Frag
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Station ID:	AN	402	_ Date:	7/11/01
Project Name: Coordinates:	НУL	EBCS 5384	_ Project Number:	\$1. \$U.49-11
Lat/Northing	47	16.5320	Long/Easting:	122 23 1415
Vertical Datum		NOW	MLW	Other:
Depth Measurement		Sounder	Leadline	
Project Depth	****		Overdredge	
		13: 18		
		Attempt 1	Attempt 2	Attempt 3
(A) Measured Water D	epth	- 36.79		
(B) Tide Height		+ 3-15+	(1.76 Portulated	8/19/01/4
(C) Mudline Elevation		=33.6 f	-34.9 min	8/19/01/2
A-B=C include sign of tide	height :	as reported)		
Estimated Penetration	on	12.5A		
Refusal Encountered	d?	No		
Total Core Length		11.9 SZ	A 0-3 B 3-10	
Core Characteristics				
Sediment Type		11000		
		cobble gravel. and C M F	cobble, gravel, sand C silt clay, organic matte	
Sediment Color		gray black, brown brown surface, olivine	gray, black, brown/ brown surface, olivine	gray, black, brown brown surface, olivine
Sediment Odor		None slight mod, strong	None, slight, mod, stro H ₂ S, petroleum, septic	
Any Layering		YES FINES		
Homogeneous		70 SAND		CALE
Comments:				

amp	ration No.							Sam	ible H	ushed By	Kr '	
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epun	of Sample	4N 40-					_	Турє	of Sa	ample \Box	Shelb	Other Was ser
ama		(feet; from lo					-	Dian	neter c	of Sample (in	ches)	_3
	le Recover						-	Sam	ule Qu	uality ▼Goo	d 🗆 F	air Poor Disturbed
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% Composition	•	Represent	ζ				Size %	ń	(a		=	
isoc	Sample Interval	at Depth	CONSISTENCY	RE				·	Theoretical	=	Sketch	
iiio	in Feet	interval (add	SIS	MOISTURE	R.	G	s	F	heo	Depth Feet V	e S	Classification and Remar
ŭ	551	Compact.)	Ž O	OIS	COLOR	<u> </u>	 	<u> </u>	┦ ┡	Feet ${}^{\circ}\!$	Sample	
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Station ID:	AN 404	,	Date:	71	1: 01		
Project Name:	HylEncs	5324	Project Number:	DI-	DI - #449-11 TZ		
Coordinates: Lat/Northing	47' 10.	4933	Long/Easting:	122	23 0368		
Vertical Datum	₩ Li		MLW	Other:			
Depth Measurement	So	ounder	Leadline				
Project Depth			Overdredge				
		: 00	A //				
	A	ttempt 1	Attempt 2		Attempt 3		
(A) Measured Water [Depth _	40.2 fr					
(B) Tide Height		+5.4 F4	13.63 Midwed	8/19/1	NIR)		
(C) Mudline Elevation		35.EF	-34.6 minu	8/19/	01 Kg/		
(A-B = C include sign of tid	e height as reporto	d)			/		
Estimated Penetrati	on	2 fz					
Refusal Encountere	d? t	Jo					
Total Core Length		1.9 ft			CMS		
Core Characteristics	i						
Sediment Type		gravel, tand C (1 F) organic matter	cobble, gravel, sand 0	CMF, c	obble, gravel, sand C M F		
Sediment Color	Drown s	ack, brown urface, olivine	gray, black, brown brown surface, olivine		ray, black, brown rown surface, olivine		
Sediment Odor	None s	light, mod, strong troleum, septic	None, slight, mod str H ₂ S, petroleum, sept		lone, slight, mod, strong		
Any Layering Homogeneous	YES SAN	FINERD.			Cms		
Comments:	Puy mu Si	TON A	C-3 f	PEN	STRADON OF		

Job No. CICCY9 - 1) TO TO TO TO TO TO TO TO TO TO TO TO TO	Sa Sa Tyr Dia Sa	ample Pushed By ample Logged By //pe of Sample Shelby Other ameter of Sample (inches) ample Quality MGood Fair Poor Disturbed //erage % Compaction =
Sample Interval in Feet Compact.) Sample Interval (add Compact.) COMPACT COMPACT.	Size % S F Range (P	F Depth Sylvarian Classification and Remarks Core Sections Core
ANYOYA ANYOYA	5-16 9: 70-8° 20	The she had solumed to the solume to the sol



1411 ^{4th} Avenue, Suite 1210 Seattle, Washinaton 9810⁻ Phone 206.287,9130 Fax 206.287-9131 www.anchorenv.com

Station ID:	AN 476	Date:	7/11/00		
Project Name:	HYLERIS S 324	Project Number:	DI- BOUS-11 TZ		
Coordinates: Lat/Northing	47 16 4020	Long/Easting:	127 22 - 9432		
Vertical Datum	MLLW	MLW	Other:		
Depth Measurement	Sounder	Seadline			
Project Depth		Overdredge			
	10:54 Attempt 1	Attempt 2	Attomat 2		
4		Attempt 2	Attempt 3		
(A) Measured Water D	0epth 42.1				
(B) Tide Height	+7.14	5.63 natulat	ad 8/19/01/Ken		
(C) Mudline Elevation	-35.0FF	1-36.5/min	5 8/19/01 Km		
(A B $-$ C include sign of tide	e height as reported)				
Estimated Penetrati	on 12 f4		\langle		
Refusal Encountere	d? No				
Total Core Length	11.7f+		ons		
Core Characteristics		-			
Sediment Type	cophie, gravel, fand CONF Silt clay, organic matter	, cobble, gravel, sand C silt clay, organic matte			
Sediment Color	gray black, brown brown surface, olivine	gray, black brown brown surface, olivine	gray, black, brown brown surface, olivine		
Sediment Odor	None-slight, mod, strong	None, slight, mod, str H ₂ S, petroleum, septic			
Any Layering Homogeneous	JES TEP TIMES BETTEIN SAND	-	Cmg		
Comments:	Mymuy NAT	IVE .	(C) (S)		
	SIZMON A 0-3	S PP BL	ACK YDESERS & PHYALLESAND/KIA		

Job	sual Cla							Date	7-12/3	^	ENVIRONMENTAL LLS
Job		- 11- cha-	2				_	Samo	le Pushed By	Malak	in material in 1882 of
العربة العرب	oration No.						-	Samo	le Logged By	العالث ا	
àm	ole No. 🧳	N -350					-			Shelb	y Other //or de cre
Dept	h of Sample						•		eter of Sample (in		2.27
Sam	oled Length (feet: from lo	g)				=				Fair Poor Disturbed
Sam	pie Recovery	(feet)	3				•	Avera	ge % Compaction) =	
	1	1	- -		T						
Composition		Represent	CONSISTENC				Size %		etical -	<u> </u>	
osi	Sample	at Depth	Щ	MOISTURE				1	al : I	Sample Sketch	
E	Interval	Interval (add	SIS	2	꼰	G	S	F	Depth Pect Pectual	e 5	Classification and Remarks
ပ	in Feet	Compact.)	ž	SIC	COLOR	 	-		≓ Feet δ	<u> </u>	
%			ŭ	Σ	Ö	Max.	Range	(PI)	Core Sections	Sai	
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L			4	wet	Distant		30-65	ير سي			Digwood Sandy Sith
F			JY)	1.05	سريتوا	-		-			Shelling work bodies
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1411 ^{4th} Avenue, Suite 1210 Scattic, Washington, 98101 Phone 206.287,9130 Fax 206.287-9131 www.anchoreny.com

Coordinates: Lat/Northing 47 Ls. 4229 Long/Easting: 122 22 2324		ore Collection		SPACE TIME &
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1411 4th Avenue, Suite 1210 Seattle, Washington, 98101 Phone 206,287,9130 Fax 206,287-9131 www.anchorenv.com

Station ID:	AN 3113	Date:	7/11/61
Project Name:	HYLERIC SSA4	Project Number:	OF 0049-11 72
Coordinates: Lat/Northing	47 16. 4955	Long/Easting:	122 23 1198
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	Attempt	Attempt 2	Attempt 3
(A) Measured Water De	- 53:7f+		
(B) Tide Height	+ 4.3f+	(+2.6) validated	3/19/01 Kan)
(C) Mudline Elevation	-29.60	31.3 mun &	19/01 Kg
(A-B = C include sign of tide	height as reported)		
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Refusal Encountered	? YES		
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Core Characteristics		Бот	ON OF SEZTION & BY
Sediment Type	cobble, gravel, sand C M sitt clay, organic matter		M F cobble gravel, sand C M F
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• The chrysene-d₁₂ and perylene-d₁₂ internal standard recovery is above method criteria in the original analyses of samples T16A-5. The diluted analyses is acceptable, however, analysis at a dilution was not required. Since the results are comparable, the diluted analysis was rejected (qualified R). Positive results associated with chrysene-d₁₂ and perylene-d₁₂ in the original analysis have been qualified as estimated (J).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T18A-4B	All semivolatile	R	Internal standard recovery below
	compounds		method criteria
T16A-6A	Di-n-octylphthalate	J positive results	Internal standard perylene-d ₁₂ recovery
AN-402A	Benzo(b)fluoranthene	-	above method criteria
T22A-2A	Benzo(k)fluoranthene		
T22A-2B	Benzo(a)pyrene		
T17A-6	Indeno(1,2,3-cd)pyrene		
T19A-7	Dibenz(a,h)anthracene		·
T15A-3	Benzo(g,h,i)perylene		
T16A-6B	Pyrene	J positive results	Internal standard chrysene-d ₁₂ and
T19A-6	Butylbenzylphthalate	-	perylene d ₁₂ recovery above method
T16A-5	Benzo(a)anthracene		criteria
	Bis(2-ethylhexyl)phthalate		
	Chrysene		
	Di-n-octylphthalate		
	Benzo(b)fluoranthene		
	Benzo(k)fluoranthene		
	Benzo(a)pyrene		
	Indeno(1,2,3-cd)pyrene		
	Dibenz(a,h)anthracene		
	Benzo(g,h,i)perylene		
AN4109	Pyrene	J positive results	Internal standard chrysene-d ₁₂ recovery
	Butylbenzylphthalate		above method criteria
	Benzo(a)anthracene		
	Bis(2-ethylhexyl)phthalate		·
	Chrysene		
AN-403 (reanalysis)	Phenol	J positive results	Internal standard 1,2-dichlorobenzene-
T17A-7 (reanalysis)	1,3-dichlorobenzene		d ₄ and naphthalene-d ₈ recovery above
	1,4-dichlorobenzene		method criteria
	Benzyl Alcohol		
	1,2-dichlorobenzene		
	2-methylphenol		
	4-methylphenol		
	2,4-dimethylphenol		
	Benzoic Acid		
	1,2,4-trichlorobenzene		
	Naphthalene		
	Hexachlorobutadiene		
	2-methylnaphthalene		

Sample ID	Analyte	Qualification	Quality Control Exceedance
T16A-6A (reanalysis) T16A-6B (reanalysis) AN-402A(reanalysis) T22A-2A (reanalysis) T22A-2B (reanalysis) AN-403 T17A-7 T16A-5 Dilution	All semivolatile compounds	R	Internal standard recovery above method criteria

Samples T18A-4A, T17A-6, T19A-6, AN-4102, and T15A-3 were diluted due to high levels of target compounds. In these instances, the laboratory reported one analysis data sheet for the original analysis and one for the dilution. To condense the results to one result per analyte per sample, results that are above the calibration range (laboratory E flag) have been rejected (qualified R). Unnecessary results and elevated detection limits from the diluted analyses have also been rejected (qualified R).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T18A-4A	All analytes flagged E by the	R	Result above the calibration range
T17A-6	laboratory		
T19A-6			
AN-4102			
T15A-3			
AN4109	·		
T18A-4A Dilution	All analytes for which the	R	Unnecessary result or elevated
T17A-6 Dilution	dilution was not required		detection limit
T19A-6 Dilution			
AN-4102 Dilution			
T15A-3 Dilution			
AN4109 Dilution			

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values.

3.0 Data Validation of Pesticides, Polychlorinated Biphenyls, Hexachlorobenzene, and Hexachlorobutadiene Analyses

3.1 Custody, Preservation, Holding Times, and Completeness – Acceptable with Discussion

All samples were extracted and analyzed within the required holding times. Except as noted below, all samples were received intact and were properly preserved. The data packages are complete and contain results for all samples and tests requested on the COC.

The temperature of the DJ37 samples was above the recommended temperature range of 2 to 6 °C at the time of laboratory receipt. The temperature of the samples was 7°C. Data qualifiers are not recommended.

The sample result was incorrect on the MS/MSD results sheet for the MS/MSD analysis of sample T17A-7. The laboratory resubmitted a corrected MS/MSD results sheet.

The laboratory control sample spike amount was incorrect on the results sheet for SDG DJ37. The laboratory resubmitted a corrected results sheet.

3.2 Blank Analyses – Acceptable

3.2.1 Method Blanks

Method blanks were analyzed at the required frequency and target compounds were not detected above the reporting limits.

3.2.2 Field Blanks

Samples HY34-FB, HY34-RB, HY34-FBSS, and HY34-RBSS were identified as field blanks. Target compounds were not detected above the reporting limits in any field blank.

3.3 Surrogate Analyses – Acceptable with Discussion

Surrogate compounds were added to all samples, blanks, and QC samples as required. Except as noted below, all surrogate recovery values are within the SAP criteria of 50 to 140%.

Several samples have one surrogate recovery value outside the SAP criteria. Data qualifiers are not required because the second surrogate recovery is acceptable.

The tetrachlorometaxylene recovery value for the certified reference material associated with SDG DJ30 is below the SAP criteria at 46.5%. Data qualifiers are not required for QC samples.

3.4 Matrix Spike/Matrix Spike Duplicate Analyses – Acceptable with Discussion

Except as noted below, MS/MSD analyses were performed at the required frequency. All percent recovery and RPD values are within the SAP criteria.

MS/MSD analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples and the laboratory control samples demonstrate the analytical system is in-control.

The 4,4'-DDT MS, MSD, and RPD values were reported as "NA" for the MS/MSD analysis of sample T17A-7. Data qualifiers are not required because the 4,4'-DDT values (sample, MS and MSD) are above the calibration range. Ideally, the laboratory should have analyzed the MS and MSD at a dilution.

3.5 Laboratory Control Sample Analyses – Acceptable

Laboratory control samples were reported with the data. All percent recovery values are within the SAP criteria.

3.6 Standard Reference Material Analyses – Acceptable with Discussion

The laboratory analyzed the Sequim Bay Fortified Reference Sediment as the standard reference material required by the SAP. Except as noted below, the results are acceptable and meet the criteria of within the 95% confidence interval.

For the standard reference material analysis associated with SDG DJ19, the 4,4'-DDE result is above the 95% confidence internal. Data qualifiers are not required based on standard reference material results alone.

3.7 Laboratory Reporting Limits – Acceptable with Discussion

The SAP target detection limits were met for all compounds, except Aroclor 1221. The laboratory's reporting limit for Aroclor 1221 is 40 μ g/kg, which is greater than the SAP, required detection limit of 20 μ g/kg.

3.8 Field Duplicates

Field duplicates are not associated with this sample set.

3.9 Overall Assessment of Data Useability

The case narrative states that approximately 10% of the extract for sample T19A-5 was lost prior to analysis. Even though the surrogate recovery values are acceptable, the results have been qualified as estimated (J) or estimated detection limit (UJ).

Samples T18A-4A, T17A-6, T17A-7, and T16A-5 were diluted due to high levels of target compounds. The laboratory reported one analysis data sheet for the original analysis and one for the dilution. To condense the results to one result per analyte per sample, results that are above the calibration range (laboratory E flag) have been rejected (qualified R). Unnecessary results and elevated detection limits from the diluted analyses have also been rejected (qualified R).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T19A-5	All pesticides and PCBs	J positive results UJ detection limits	Portion of extract lost during analysis
T18A-4A T17A-6 T17A-7 T16A-5	All analytes flagged E by the laboratory	R	Result above the calibration range
T18A-4A Dilution T17A-6 Dilution T17A-7 Dilution T16A-5 Dilution	All analytes for which the dilution was not required	R	Unnecessary result or elevated detection limit

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values.

4.0 Data Validation of Tributyltin in Porewater

4.1 Custody, Preservation, Holding Times and Completeness – Acceptable with Qualifications

Except as noted below, all porewaters were collected within the PSDDA 7 day holding time (DMMP 1998) and all samples were extracted and analyzed within the required holding times. All samples were received intact and were properly preserved. The data packages are complete and contain results for all samples and test requested on the COC.

The temperature of the samples upon receipt at the laboratory was not documented in the DM51 report. The laboratory was contacted and provided the sample temperature of 5 °C.

Samples AN-403 and T23A-5 were analyzed twice for porewater tributyltin (TBT). The original analysis was performed within the holding time. The second analysis was performed outside the hold time. The out-of-hold time analyses have been retained for comparison purposes.

The porewater extraction of the samples in SDGs DM51 and DM81 were performed past the seven day holding time. Positive results have been qualified as estimated (J) and non-detected results have been qualified as estimated detection limits (UJ).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-3113	TBT	J positive results	Porewater extraction hold time
AN-404		UJ detection limits	exceeded
AN-405			
AN-406			
T23A-5 (DM51E)			
T22A-2			·
AN-403 (DM81A)			-

4.2 Blank Analyses – Acceptable

4.2.1 Method Blanks

Method blanks were analyzed at the required frequency and target analytes were not detected above the reporting limit.

4.2.2 Field Blanks

The field blanks were not analyzed for TBT.

4.3 Surrogate Analyses – Acceptable

Surrogate compounds were added to all samples, blanks, and QC samples as required. The recovery values are within the SAP criteria.

4.4 Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses were not performed. The SAP does not require MS/MSD analyses for porewater samples.

4.5 Laboratory Control Sample Analysis – Acceptable

Laboratory control samples were analyzed as required. Laboratory control samples in seawater were prepared by REGL to monitor the porewater collection. Blank spikes were prepared by ARI to monitor the TBT extraction. All percent recovery values are within the SAP criteria.

4.6 Standard Reference Material Analyses – Acceptable with Discussion

Standard reference materials were not analyzed as required for TBT. The SAP requires one standard reference material analysis per 20 samples. Data qualifiers are not required because the seawater laboratory control samples demonstrate that the entire analytical system is in-control.

4.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limit of 0.07 µg/L TBT ion was met.

4.8 Field Duplicates

Field duplicates are not associated with this sample set.

4.9 Overall Assessment of Data Useability

The results of samples AN-3113, AN-404, AN-405, AN-406, T23A-5 (DM51E), and T22A-2 were flagged M by the laboratory. The laboratory defines the M flag as "indicates an estimated value of analyte found and confirmed by analyst but with low spectral match". All results flagged M by the laboratory have been qualified as estimated (J).

The case narrative states that the internal standard recovery is outside the method criteria for the original analysis and the reanalysis of sample AN-403 (DM81A). Since the reanalysis results are similar, they were rejected. The results of the original analysis have been qualified as estimated (J).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-3113 AN-404	TBT	J	Estimated result with poor spectral match
AN-405			
AN-406			
T23A-5 (DM51E)			i
T22A-2			
AN-403 (DM81A)	TBT	R	Internal standard recovery above method criteria
reanalysis			(rejected in favor of original analysis)
AN-403 (DM81A)	TBT	J	Internal standard recovery above method criteria

The precision of the data set is unknown because MS/MSDs were not analyzed and field duplicates are not associated with the sample set.

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values.

5.0 Data Validation of Metals Analyses

5.1 Custody, Preservation, Holding Times, and Completeness – Acceptable

All samples were analyzed within the required holding times and all samples were received intact and were properly preserved. The reports are complete and contain results for all samples and tests requested on the COC.

5.2 Blank Analyses – Acceptable

5.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected above the reporting limits.

5.2.2 Field Blanks

Samples HY34-FB, HY34-RB, HY34-FBSS, and HY34-RBSS were identified as field blanks. Target analytes were not detected above the reporting limits in any of the field blanks.

5.3 Duplicate Sample Analyses – Acceptable with Qualifications

Except as noted below, sample duplicate analyses were reported at the required frequency and all RPD values are within the SAP criteria of RPD values less than or equal to 20.

Duplicate analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples.

The cadmium RPD value for the duplicate analysis of sample AN-402A is above the SAP criteria at 33.3%. Data qualifiers are not required because the results meet the Functional Guidelines alternative criteria of less than 5 times the reporting limit and within two reporting limits of each other.

The antimony, cadmium, mercury, and zinc RPD values for the duplicate analysis of sample T17A-5 are above the SAP criteria at 31.6, 28.6%, 23.5%, and 25.6%, respectively. Data qualifiers are not required for antimony, cadmium, or mercury because the results meet the alternative criteria of less than 5 times the reporting limit and within two reporting limits of each other. The zinc result of sample T17A-5 has been qualified as estimated (J).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T17A-5	Zinc	J	Duplicate RPD greater than 20

5.4 Matrix Spike Analyses – Acceptable with Qualifications

Except as noted below, matrix spike analyses were reported at the required frequency and all percent recovery values are within the SAP criteria of 65 to 135%.

Matrix spike analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples and laboratory control samples demonstrate the analytical system is in-control.

The antimony and zinc recovery values in the spiked analysis of sample AN-321A are below the SAP criteria at 12.2% and 60.0%, respectively. Functional Guidelines requires rejecting non-detected results associated with recovery values below 30%. Therefore, the antimony result of sample AN-321A has been rejected (qualified R). The zinc result has been qualified as estimated (J).

The antimony recovery value in the spiked analysis of sample AN-402A is below the SAP criteria at 11.0%. Since the antimony result of sample AN-321A is non-detected, it has been rejected (qualified R).

The antimony recovery value in the spiked analysis of sample T17A-5 is below the SAP criteria at 13.2%. Since the antimony result of sample T17A-5 is positive it has been qualified as estimated (J).

The antimony recovery value in the spiked analysis of sample AN-4102 is below the SAP criteria at 12.9%. Since the antimony result of sample AN-4102 is non-detected it has been rejected (qualified R).

Due to the pattern of very low (less than 30%) recovery of antimony in all the matrix spikes, the antimony results of all sediment samples have been qualified as estimated (J) or rejected (qualified R).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-321A AN-402A AN-4102	Antimony	R	Matrix spike recovery < 30% and not detected
T17A-5	Antimony	J	Matrix spike recovery < 30% and detected
AN-321A	Zinc	J	Matrix spike recovery below SAP criteria
All sediment samples	Antimony	J positive results R detection limits	Pattern of matrix spike recovery below 30%

5.5 Laboratory Control Sample Analyses - Acceptable

Laboratory control samples were reported with the data. All percent recovery values are within the SAP criteria.

5.6 Standard Reference Material Analyses – Acceptable with Qualifications

Standard reference materials were analyzed as required by the SAP. Except as noted below, all results are within the SAP criteria of 65 to 135%.

The antimony recovery values are below the SAP criteria for all the standard reference material analyses (values range from 35.3% to 48.5%). Due to the pattern of low recovery, the antimony results of all sediment samples have been qualified as estimated (J) or estimated detection limits (UJ).

Sample ID	Analyte	Qualification	Quality Control Exceedance
All sediment	Antimony	J positive results	Pattern of standard reference material
samples		UJ detection limits	recovery below the SAP criteria

5.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limits were met.

5.8 Field Duplicates

Field duplicates are not associated with this sample set.

5.9 Overall Assessment of Data Useability

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values. Values that are rejected are not useable for any purpose.

6.0 Data Validation of Conventional Parameters

6.1 Custody, Preservation, Holding Times, and Completeness – Acceptable with Discussion

All samples were analyzed within the required holding times and all samples were received intact and were properly preserved. The report is complete and contains results for all samples and tests requested on the COC.

The sample results and QC results for SDG DJ17 were not present in the data summary section of the data package (the results of DJ19 were there instead). The sample and QC results of DJ17 were copied from the raw data section and added to the data summary section of the data package.

6.2 Blank Analyses – Acceptable with Discussion

6.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Except as noted below, target analytes were not detected above the reporting limits.

Total organic carbon was detected in the 7-26-01 method blank at 0.0056%. Data qualifiers are not required because the associated sample results are greater than five times the blank concentration.

6.2.2 Field Blanks

The field blanks were not analyzed for conventional parameters.

6.3 Replicate Sample Analyses – Acceptable

Sample triplicate analyses were reported at the required frequency and all relative standard deviation values are within the SAP criteria.

6.4 Matrix Spike Analyses – Acceptable

Matrix spike analyses were reported at the required frequency and all percent recovery values are within the SAP criteria.

6.5 Laboratory Control Sample Analyses

Laboratory control samples were not reported with the data. The SAP does not require laboratory control sample analyses.

6.6 Standard Reference Material Analyses – Acceptable

Standard reference materials were reported for TOC as required by the SAP. The recovery values are within the SAP criteria.

6.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limits were met.

6.8 Field Duplicates

Field duplicates are not associated with this sample set.

6.9 Overall Assessment of Data Useability

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable.

7.0 Assessment of Data Quality Objectives

7.1 Precision

Precision is a measure of the mutual agreement among individual measurements of the same property, under prescribed similar conditions. Precision is determined through analysis of matrix spike/matrix spike duplicates, sample duplicates, and field duplicate samples. Duplicate samples are evaluated for precision in terms of relative percent difference. Relative percent difference is defined as the difference between the duplicate results divided by the mean and expressed as a percent.

The precision of the pesticide/PCB and conventional data set meets the DQO of the SAP. The precision of the MS/MSD analyzed on sample T17A-7 is unknown because the MS and MSD results are above the calibration range. The RPD values of the remaining MS/MSDs and laboratory duplicates are within criteria. Field duplicates are not associated with this sample set.

The precision of the semivolatile organics data set meets the SAP DQO, with two exceptions. The precision of the pyrene results of samples T21A-2B and T19A-7 is poor as shown by the high MS/MSD RPD values. Since a pattern of imprecision was not observed only the pyrene results of samples T21A-2B and T19A-7 were qualified as estimated.

The precision of the TBT data set is unknown. The lack of MS/MSDs and field duplicate samples means the precision of the data set cannot be determined.

The precision of the metals data set meets the SAP DQO, with one exception. The zinc precision of the duplicate analyses of sample T17A-5 does not meet the required RPD criteria. The zinc result of sample T17A-5 has been qualified as estimated to denote the imprecision.

7.2 Accuracy

Accuracy is the degree of agreement between a measurement and the accepted reference or true value. The level of accuracy is determined by examination of surrogates, matrix spikes, matrix spike duplicates, laboratory control samples, standard reference materials, method blanks, and field blanks. The surrogate, matrix spike, matrix spike duplicate, laboratory control sample, and standard reference material recovery values were compared to the criteria set forth in the SAP, Functional Guidelines, or the analytical method. Method and field blanks are analyzed to identify compounds that could be introduced during the sampling, laboratory extraction, or analysis phase (i.e., laboratory contaminates) and lead to inaccurate results.

The accuracy of the TBT data sets meets the DQO of the SAP. The surrogates, laboratory control samples, and method blanks are acceptable. The field blanks were not analyzed for TBT.

The accuracy of the semivolatile organics data set meets the SAP DQO, with the following exceptions. The pentachlorophenol recovery of one laboratory control sample is below the SAP criteria. The pentachlorophenol results in the associated samples have been qualified as estimated to alert the data user to the inaccuracy. Several MS and MSD recovery values are below the SAP criteria. Accuracy is only impacted when both the MS and MSD recovery values are affected. The pyrene result of sample T21A-2B maybe biased low since the MS and MSD recovery values are low. Bis(2-ethylhexyl)phthalate was detected above the reporting limit in one method blank. The impact of the method blank contamination has been minimized by the proper use of data qualifiers as prescribed by Functional Guidelines. Qualifying contaminates in the associated samples as undetected when their concentration is less than 10 times the blank concentration minimizes the possibility of false positive results. The standard reference materials and field blanks are acceptable.

The accuracy of the pesticide/PCB data set meets the DQO of the SAP, with the following discussion. Several samples have surrogate recovery values outside the SAP criteria. The accuracy of the sample results is not compromised because a pattern was not observed. The high recovery of 4,4'-DDT in one standard reference material analysis does not impact the accuracy of the data set because the laboratory control samples and MS/MSDs are acceptable. The method blanks and field blanks are free of target compounds.

The accuracy of the metals data meets the DQO set forth in the SAP, with the exception of the antimony results and one zinc result. The antimony recovery in the matrix spikes and standard reference materials are below the SAP criteria. The matrix spike recovery values are below the Functional Guidelines lower limit (30%) that requires rejecting nondetected results. The pattern of low matrix spike and standard reference material recovery indicates the antimony data are biased low. Zinc recovered low from the matrix spike analysis of sample AN-321A, indicating a potential low bias to the zinc result. The laboratory control samples, method blanks, and field blanks are acceptable.

The accuracy of the conventional data meets the DQO set forth in the SAP. The TOC detected in one method blank does not affect the accuracy of the data set because the associated sample

concentrations are greater than five times the blank level. The matrix spikes and standard reference materials are acceptable.

7.3 Representativeness

Representativeness is the extent to which the data reflect the actual contaminate levels present in the samples. Representativeness is assessed through method and field blanks, and proper preservation and handling. Method and field blank analyses allow for the detection of artifacts that may be reported as false positive results. Proper sample preservation and handling ensure that sample results reflect the actual sample concentrations.

The data are assumed to be representative, with the exception of the samples analyzed past the holding time. The TBT results of samples AN-3113, AN-404, AN-405, AN-406, T23A (DM51E), T22A-2, and AN-403 may not be representative because the porewater extraction was performed past the required holding time. The bis(2-ethylhexyl)phthalate and TOC detected in the method blanks does not impact the representativeness of the data because the procedures in Functional Guidelines were followed to minimize the impact of the blank contamination. The samples were properly preserved and handled (the receipt temperature deviation is negligible).

7.4 Comparability

Comparability is a measure of how easily the data set can be compared and combined with other data sets. The data are assumed to be comparable since standard EPA methods were used to analyze the samples, the method QC criteria were met, and routine detection limits were reported.

7.5 Completeness

Completeness is expressed as the ratio of valid results to the amount of data expected to be obtained under normal conditions. Completeness is determined by assessing the number of samples for which valid results were obtained versus the number of samples that were submitted to the laboratory for analysis. Valid results are results that are determined to be usable during the data validation review process.

The 100% completeness goal of the SAP was not met. The completeness of this data set is 98.4%. The complete is less than 100% because the nondetected antimony results of the sediment samples were rejected due to a pattern of low spike recovery.

8.0 Definition of Data Qualifiers

8.1 Inorganic Data Qualifiers

The following data validation qualifiers were used in the review of this data set. These qualifiers are taken from Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA 1994).

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
- R The data are unusable. (Note: Analyte may or may not be present.)

8.2 Organic Data Qualifiers

The following data validation qualifiers were used in the review of this data set. These qualifiers are taken from Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1994a).

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

9.0 References

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- USEPA. 1994. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. United States Environmental Protection Agency. Office of Solid Waste and Emergence Response. February 1994.
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- USEPA. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Updates I, II, IIA, IIB, and III. United States Environmental Protection Agency Office of Solid Waste. December 1996.
- USEPA. 1999. *Methods and Guidance for Analysis of Water*, Version 2.0. United States Environmental Protection Agency Office of Science and Technology. EPA 821-C-99-004. CD ROM. June 1999.

Table 2 - Summary of Qualified Data

Sample ID	Analyte	Qualifier	Reason for Qualification
T22A-2B	Bis(2-ethylhexyl)phthalate	U at reported value	Result is greater than the reporting limit and
AN-3113B		•	less than 10 times the blank level
AN-404A			
T21A-2B	Pyrene	J	MS & MSD recovery below SAP criteria
			and RPD greater than SAP criteria
T19A-7	Pyrene	J	RPD value greater than 40
T17A-5	Pentachlorophenol	UJ	LCS recovery < 50%
T17A-6	-		•
T19A-5			
T19A-6			
AN-403 reanalysis			
T17A-7 reanalysis			
T19A-7			
T19A-8			
AN-406			
AN-302			
T23A-5			
AN-3111			
AN-3104			
T40A-4			
AN4109			
AN-404			
AN-405			
T22A-2			

Sample ID	Analyte	Qualifier	Reason for Qualification
T16A-6A	All analytes flagged M	J	Estimated result with poor
T16A-6B	by the laboratory		spectral match
AN-402A			•
T22A-2A			
T22A-2D			
AN-3113A	•		
AN-3113B	•		
AN-404A			
T17A-5			
T17A-6			
T19A-6			
AN-403 Reanalysis			
T17A-7 Reanalysis			
T19A-7			
T19A-8]	
AN-406			
AN-302			
T23A-5			
AN-3111			
AN-3104			
T40A-4			
AN4109			
AN-404			
AN-405			
T22A-2			
T15A-1			
T18A-3			
T18A-4			
T20A-1			
AN402			
AN-3113			
T18A-4B	All semivolatile	R	Internal standard recovery below method
	compounds		criteria (rejected in favor of the
			diluted analysis)
T16A-6A	Di-n-octylphthalate	J positive results	Internal standard perylene-d ₁₂ recovery
AN-402A	Benzo(b)fluoranthene		above method criteria
T22A-2A	Benzo(k)fluoranthene		
T22A-2B	Benzo(a)pyrene		
T17A-6	Indeno(1,2,3-cd)pyrene		
T19A-7	Dibenz(a,h)anthracene		
T15A-3	Benzo(g,h,i)perylene		

Sample ID	Analyte	Qualifier	Reason for Qualification
T16A-6B	Pyrene	J positive results	Internal standard chrysene-d ₁₂ and perylene-
T19A-6	Butylbenzylphthalate		d ₁₂ recovery above
T16A-5	Benzo(a)anthracene		method criteria
	Bis(2-ethylhexyl)phthalate		
	Chrysene		
	Di-n-octylphthalate		
	Benzo(b)fluoranthene		
	Benzo(k)fluoranthene		
	Benzo(a)pyrene		
	Indeno(1,2,3-cd)pyrene		
	Dibenz(a,h)anthracene		
AN4109	Benzo(g,h,i)perylene		
AN4109	Pyrene Describe annularitation later	J positive results	Internal standard chrysene-d ₁₂ recovery
	Butylbenzylphthalate		above method criteria
	Benzo(a)anthracene		
	Bis(2-ethylhexyl)phthalate		
AN-403 reanalysis	Chrysene Phenol	T '' 1.	7. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
T17A-7 reanalysis	1,3-dichlorobenzene	J positive results	Internal standard 1,2 dichlorobenzene d ₄
117A-7 Icalialysis	1,4-dichlorobenzene		and naphthalene-d ₈ recovery above method criteria
	Benzyl Alcohol		criteria
	1,2-dichlorobenzene		
	2-methylphenol		
	4-methylphenol		
	2,4-dimethylphenol		
	Benzoic Acid		
	1,2,4-trichlorobenzene		
	Naphthalene		
	Hexachlorobutadiene		
	2-methylnaphthalene		
T16A-6A (reanalysis)	All semivolatile	R	Internal standard recovery above method
T16A-6B (reanalysis)	compounds		criteria
AN-402A(reanalysis)	•		
T22A-2A (reanalysis)		•	
T22A-2B (reanalysis)			
AN-403			
T17A-7			
T16A-5 Dilution			
T18A-4A	All SVOA analytes	R	Result above the calibration range
T17A-6	flagged E by the laboratory		
T19A-6			
AN-4102			·
T15A-3			
AN4109			
T18A-4A Dilution	All SVOA analytes for	R	Unnecessary result or elevated
T17A-6 Dilution	which the dilution was not		detection limit
T19A-6 Dilution	required		
AN-4102 Dilution			
T15A-3 Dilution			
AN4109 Dilution			
T19A-5	All pesticides and PCBs	J positive results	Portion of extract lost during analysis
		UJ detection limits	

Sample ID	Analyte	Qualifier	Reason for Qualification
T18A-4A T17A-6 T17A-7 T16A-5	All P/PCB analytes tlagged E by the laboratory	R	Result above the calibration range
T18A-4A Dilution T17A-6 Dilution T17A-7 Dilution T16A-5 Dilution	All P/PCB analytes for which the dilution was not required	R	Unnecessary result or elevated detection limit
AN-3113 AN-404 AN-405 AN-406 T23A-5 (DM51E) T22A-2 AN-403 (DM81A)	ТВТ	J positive results UJ detection limits	Porewater extraction hold time exceeded
AN-3113 AN-404 AN-405 AN-406 T23A-5 (DM51E) T22A-2	ТВТ	J	Estimated result with poor spectral match
AN-403 (DM81A) reanalysis	ТВТ	R	Internal standard recovery above method criteria (rejected in favor of original analysis)
AN-403 (DM81A)	ТВТ	J	Internal standard recovery above method criteria
T17A-5	Zinc	J	Duplicate RPD greater than 20
AN-321A AN-402A AN-4102	Antimony	R	Matrix spike recovery < 30% and not detected
T17A-5	Antimony	J	Matrix spike recovery < 30% and detected
AN-321A	Zinc	J	Matrix spike recovery below SAP criteria
All sediment samples	Antimony	J positive results R detection limits	Pattern of matrix spike recovery below 30%
All sediment samples	Antimony	J positive results UJ detection limits	Pattern of standard reference material recovery below SAP criteria

Appendix A

Laboratory Communications (12 pages)

The temperature of the DJ37 samples was above the recommended temperature range of 2 to 6 °C at the time of laboratory receipt. The temperature of the samples was 7°C. Data qualifiers are not recommended.

The sample result was incorrect on the MS/MSD results sheet for the MS/MSD analysis of sample T17A-7. The laboratory resubmitted a corrected MS/MSD results sheet.

The laboratory control sample spike amount was incorrect on the results sheet for SDG DJ37. The laboratory resubmitted a corrected results sheet.

3.2 Blank Analyses - Acceptable

3.2.1 Method Blanks

Method blanks were analyzed at the required frequency and target compounds were not detected above the reporting limits.

3.2.2 Field Blanks

Samples HY34-FB, HY34-RB, HY34-FBSS, and HY34-RBSS were identified as field blanks. Target compounds were not detected above the reporting limits in any field blank.

3.3 Surrogate Analyses – Acceptable with Discussion

Surrogate compounds were added to all samples, blanks, and QC samples as required. Except as noted below, all surrogate recovery values are within the SAP criteria of 50 to 140%.

Several samples have one surrogate recovery value outside the SAP criteria. Data qualifiers are not required because the second surrogate recovery is acceptable.

The tetrachlorometaxylene recovery value for the certified reference material associated with SDG DJ30 is below the SAP criteria at 46.5%. Data qualifiers are not required for QC samples.

3.4 Matrix Spike/Matrix Spike Duplicate Analyses – Acceptable with Discussion

Except as noted below, MS/MSD analyses were performed at the required frequency. All percent recovery and RPD values are within the SAP criteria.

MS/MSD analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples and the laboratory control samples demonstrate the analytical system is in-control.

The 4,4'-DDT MS, MSD, and RPD values were reported as "NA" for the MS/MSD analysis of sample T17A-7. Data qualifiers are not required because the 4,4'-DDT values (sample, MS and MSD) are above the calibration range. Ideally, the laboratory should have analyzed the MS and MSD at a dilution.

3.5 Laboratory Control Sample Analyses – Acceptable

Laboratory control samples were reported with the data. All percent recovery values are within the SAP criteria.

3.6 Standard Reference Material Analyses – Acceptable with Discussion

The laboratory analyzed the Sequim Bay Fortified Reference Sediment as the standard reference material required by the SAP. Except as noted below, the results are acceptable and meet the criteria of within the 95% confidence interval.

For the standard reference material analysis associated with SDG DJ19, the 4,4'-DDE result is above the 95% confidence internal. Data qualifiers are not required based on standard reference material results alone.

3.7 Laboratory Reporting Limits – Acceptable with Discussion

The SAP target detection limits were met for all compounds, except Aroclor 1221. The laboratory's reporting limit for Aroclor 1221 is 40 μ g/kg, which is greater than the SAP, required detection limit of 20 μ g/kg.

3.8 Field Duplicates

Field duplicates are not associated with this sample set.

3.9 Overall Assessment of Data Useability

The case narrative states that approximately 10% of the extract for sample T19A-5 was lost prior to analysis. Even though the surrogate recovery values are acceptable, the results have been qualified as estimated (J) or estimated detection limit (UJ).

Samples T18A-4A, T17A-6, T17A-7, and T16A-5 were diluted due to high levels of target compounds. The laboratory reported one analysis data sheet for the original analysis and one for the dilution. To condense the results to one result per analyte per sample, results that are above the calibration range (laboratory E flag) have been rejected (qualified R). Unnecessary results and elevated detection limits from the diluted analyses have also been rejected (qualified R).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T19A-5	All pesticides and PCBs	J positive results UJ detection limits	Portion of extract lost during analysis
T18A-4A T17A-6 T17A-7 T16A-5	All analytes flagged E by the laboratory	R	Result above the calibration range
T18A-4A Dilution T17A-6 Dilution T17A-7 Dilution T16A-5 Dilution	All analytes for which the dilution was not required	R	Unnecessary result or elevated detection limit

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values.

4.0 Data Validation of Tributyltin in Porewater

4.1 Custody, Preservation, Holding Times and Completeness – Acceptable with Qualifications

Except as noted below, all porewaters were collected within the PSDDA 7 day holding time (DMMP 1998) and all samples were extracted and analyzed within the required holding times. All samples were received intact and were properly preserved. The data packages are complete and contain results for all samples and test requested on the COC.

The temperature of the samples upon receipt at the laboratory was not documented in the DM51 report. The laboratory was contacted and provided the sample temperature of 5 °C.

Samples AN-403 and T23A-5 were analyzed twice for porewater tributyltin (TBT). The original analysis was performed within the holding time. The second analysis was performed outside the hold time. The out-of-hold time analyses have been retained for comparison purposes.

The porewater extraction of the samples in SDGs DM51 and DM81 were performed past the seven day holding time. Positive results have been qualified as estimated (J) and non-detected results have been qualified as estimated detection limits (UJ).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-3113 AN-404	TBT	J positive results UJ detection limits	Porewater extraction hold time exceeded
AN-405 AN-406			
T23A-5 (DM51E) T22A-2			
AN-403 (DM81A)			

4.2 Blank Analyses – Acceptable

4.2.1 Method Blanks

Method blanks were analyzed at the required frequency and target analytes were not detected above the reporting limit.

4.2.2 Field Blanks

The field blanks were not analyzed for TBT.

4.3 Surrogate Analyses – Acceptable

Surrogate compounds were added to all samples, blanks, and QC samples as required. The recovery values are within the SAP criteria.

4.4 Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses were not performed. The SAP does not require MS/MSD analyses for porewater samples.

4.5 Laboratory Control Sample Analysis – Acceptable

Laboratory control samples were analyzed as required. Laboratory control samples in seawater were prepared by REGL to monitor the porewater collection. Blank spikes were prepared by ARI to monitor the TBT extraction. All percent recovery values are within the SAP criteria.

4.6 Standard Reference Material Analyses – Acceptable with Discussion

Standard reference materials were not analyzed as required for TBT. The SAP requires one standard reference material analysis per 20 samples. Data qualifiers are not required because the seawater laboratory control samples demonstrate that the entire analytical system is in-control.

4.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limit of 0.07 µg/L TBT ion was met.

4.8 Field Duplicates

Field duplicates are not associated with this sample set.

4.9 Overall Assessment of Data Useability

The results of samples AN-3113, AN-404, AN-405, AN-406, T23A-5 (DM51E), and T22A-2 were flagged M by the laboratory. The laboratory defines the M flag as "indicates an estimated value of analyte found and confirmed by analyst but with low spectral match". All results flagged M by the laboratory have been qualified as estimated (J).

The case narrative states that the internal standard recovery is outside the method criteria for the original analysis and the reanalysis of sample AN-403 (DM81A). Since the reanalysis results are similar, they were rejected. The results of the original analysis have been qualified as estimated (J).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-3113 AN-404 AN-405 AN-406 T23A-5 (DM51E)	ТВТ	J	Estimated result with poor spectral match
T22A-2			
AN-403 (DM81A) reanalysis	TBT	R	Internal standard recovery above method criteria (rejected in favor of original analysis)
AN-403 (DM81A)	TBT	J	Internal standard recovery above method criteria

The precision of the data set is unknown because MS/MSDs were not analyzed and field duplicates are not associated with the sample set.

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values.

5.0 Data Validation of Metals Analyses

5.1 Custody, Preservation, Holding Times, and Completeness - Acceptable

All samples were analyzed within the required holding times and all samples were received intact and were properly preserved. The reports are complete and contain results for all samples and tests requested on the COC.

5.2 Blank Analyses – Acceptable

5.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected above the reporting limits.

5.2.2 Field Blanks

Samples HY34-FB, HY34-RB, HY34-FBSS, and HY34-RBSS were identified as field blanks. Target analytes were not detected above the reporting limits in any of the field blanks.

5.3 Duplicate Sample Analyses – Acceptable with Qualifications

Except as noted below, sample duplicate analyses were reported at the required frequency and all RPD values are within the SAP criteria of RPD values less than or equal to 20.

Duplicate analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples.

The cadmium RPD value for the duplicate analysis of sample AN-402A is above the SAP criteria at 33.3%. Data qualifiers are not required because the results meet the Functional Guidelines alternative criteria of less than 5 times the reporting limit and within two reporting limits of each other.

The antimony, cadmium, mercury, and zinc RPD values for the duplicate analysis of sample T17A-5 are above the SAP criteria at 31.6, 28.6%, 23.5%, and 25.6%, respectively. Data qualifiers are not required for antimony, cadmium, or mercury because the results meet the alternative criteria of less than 5 times the reporting limit and within two reporting limits of each other. The zinc result of sample T17A-5 has been qualified as estimated (J).

Sample ID	Analyte	Qualification	Quality Control Exceedance
T17A-5	Zinc	J	Duplicate RPD greater than 20

5.4 Matrix Spike Analyses – Acceptable with Qualifications

Except as noted below, matrix spike analyses were reported at the required frequency and all percent recovery values are within the SAP criteria of 65 to 135%.

Matrix spike analyses were not reported for the water samples. Data qualifiers are not required because the water samples are field QC samples and laboratory control samples demonstrate the analytical system is in-control.

The antimony and zinc recovery values in the spiked analysis of sample AN-321A are below the SAP criteria at 12.2% and 60.0%, respectively. Functional Guidelines requires rejecting non-detected results associated with recovery values below 30%. Therefore, the antimony result of sample AN-321A has been rejected (qualified R). The zinc result has been qualified as estimated (J).

The antimony recovery value in the spiked analysis of sample AN-402A is below the SAP criteria at 11.0%. Since the antimony result of sample AN-321A is non-detected, it has been rejected (qualified R).

The antimony recovery value in the spiked analysis of sample T17A-5 is below the SAP criteria at 13.2%. Since the antimony result of sample T17A-5 is positive it has been qualified as estimated (J).

The antimony recovery value in the spiked analysis of sample AN-4102 is below the SAP criteria at 12.9%. Since the antimony result of sample AN-4102 is non-detected it has been rejected (qualified R).

Due to the pattern of very low (less than 30%) recovery of antimony in all the matrix spikes, the antimony results of all sediment samples have been qualified as estimated (J) or rejected (qualified R).

Sample ID	Analyte	Qualification	Quality Control Exceedance
AN-321A AN-402A AN-4102	Antimony	R	Matrix spike recovery < 30% and not detected
T17A-5	Antimony	J	Matrix spike recovery < 30% and detected
AN-321A	Zinc	J	Matrix spike recovery below SAP criteria
All sediment samples	Antimony	J positive results R detection limits	Pattern of matrix spike recovery below 30%

5.5 Laboratory Control Sample Analyses – Acceptable

Laboratory control samples were reported with the data. All percent recovery values are within the SAP criteria.

5.6 Standard Reference Material Analyses – Acceptable with Qualifications

Standard reference materials were analyzed as required by the SAP. Except as noted below, all results are within the SAP criteria of 65 to 135%.

The antimony recovery values are below the SAP criteria for all the standard reference material analyses (values range from 35.3% to 48.5%). Due to the pattern of low recovery, the antimony results of all sediment samples have been qualified as estimated (J) or estimated detection limits (UJ).

Sample ID	Analyte	Qualification	Quality Control Exceedance
All sediment	Antimony	J positive results	Pattern of standard reference material
samples	-	UJ detection limits	recovery below the SAP criteria

5.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limits were met.

5.8 Field Duplicates

Field duplicates are not associated with this sample set.

5.9 Overall Assessment of Data Useability

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable except where flagged with data qualifiers that modify the usefulness of the individual values. Values that are rejected are not useable for any purpose.

6.0 Data Validation of Conventional Parameters

6.1 Custody, Preservation, Holding Times, and Completeness – Acceptable with Discussion

All samples were analyzed within the required holding times and all samples were received intact and were properly preserved. The report is complete and contains results for all samples and tests requested on the COC.

The sample results and QC results for SDG DJ17 were not present in the data summary section of the data package (the results of DJ19 were there instead). The sample and QC results of DJ17 were copied from the raw data section and added to the data summary section of the data package.

6.2 Blank Analyses – Acceptable with Discussion

6.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Except as noted below, target analytes were not detected above the reporting limits.

Total organic carbon was detected in the 7-26-01 method blank at 0.0056%. Data qualifiers are not required because the associated sample results are greater than five times the blank concentration.

6.2.2 Field Blanks

The field blanks were not analyzed for conventional parameters.

6.3 Replicate Sample Analyses – Acceptable

Sample triplicate analyses were reported at the required frequency and all relative standard deviation values are within the SAP criteria.

6.4 Matrix Spike Analyses – Acceptable

Matrix spike analyses were reported at the required frequency and all percent recovery values are within the SAP criteria.

6.5 Laboratory Control Sample Analyses

Laboratory control samples were not reported with the data. The SAP does not require laboratory control sample analyses.

6.6 Standard Reference Material Analyses – Acceptable

Standard reference materials were reported for TOC as required by the SAP. The recovery values are within the SAP criteria.

6.7 Laboratory Reporting Limits – Acceptable

The SAP target detection limits were met.

6.8 Field Duplicates

Field duplicates are not associated with this sample set.

6.9 Overall Assessment of Data Useability

The useability of the data is based on the guidance documents listed above. Upon consideration of the information presented here, the data are acceptable.

7.0 Assessment of Data Quality Objectives

7.1 Precision

Precision is a measure of the mutual agreement among individual measurements of the same property, under prescribed similar conditions. Precision is determined through analysis of matrix spike/matrix spike duplicates, sample duplicates, and field duplicate samples. Duplicate samples are evaluated for precision in terms of relative percent difference. Relative percent difference is defined as the difference between the duplicate results divided by the mean and expressed as a percent.

The precision of the pesticide/PCB and conventional data set meets the DQO of the SAP. The precision of the MS/MSD analyzed on sample T17A-7 is unknown because the MS and MSD results are above the calibration range. The RPD values of the remaining MS/MSDs and laboratory duplicates are within criteria. Field duplicates are not associated with this sample set.

The precision of the semivolatile organics data set meets the SAP DQO, with two exceptions. The precision of the pyrene results of samples T21A-2B and T19A-7 is poor as shown by the high MS/MSD RPD values. Since a pattern of imprecision was not observed only the pyrene results of samples T21A-2B and T19A-7 were qualified as estimated.

The precision of the TBT data set is unknown. The lack of MS/MSDs and field duplicate samples means the precision of the data set cannot be determined.

The precision of the metals data set meets the SAP DQO, with one exception. The zinc precision of the duplicate analyses of sample T17A-5 does not meet the required RPD criteria. The zinc result of sample T17A-5 has been qualified as estimated to denote the imprecision.

7.2 Accuracy

Accuracy is the degree of agreement between a measurement and the accepted reference or true value. The level of accuracy is determined by examination of surrogates, matrix spikes, matrix spike duplicates, laboratory control samples, standard reference materials, method blanks, and field blanks. The surrogate, matrix spike, matrix spike duplicate, laboratory control sample, and standard reference material recovery values were compared to the criteria set forth in the SAP, Functional Guidelines, or the analytical method. Method and field blanks are analyzed to identify compounds that could be introduced during the sampling, laboratory extraction, or analysis phase (i.e., laboratory contaminates) and lead to inaccurate results.

The accuracy of the TBT data sets meets the DQO of the SAP. The surrogates, laboratory control samples, and method blanks are acceptable. The field blanks were not analyzed for TBT.

The accuracy of the semivolatile organics data set meets the SAP DQO, with the following exceptions. The pentachlorophenol recovery of one laboratory control sample is below the SAP criteria. The pentachlorophenol results in the associated samples have been qualified as estimated to alert the data user to the inaccuracy. Several MS and MSD recovery values are below the SAP criteria. Accuracy is only impacted when both the MS and MSD recovery values are affected. The pyrene result of sample T21A-2B maybe biased low since the MS and MSD recovery values are low. Bis(2-ethylhexyl)phthalate was detected above the reporting limit in one method blank. The impact of the method blank contamination has been minimized by the proper use of data qualifiers as prescribed by Functional Guidelines. Qualifying contaminates in the associated samples as undetected when their concentration is less than 10 times the blank concentration minimizes the possibility of false positive results. The standard reference materials and field blanks are acceptable.

The accuracy of the pesticide/PCB data set meets the DQO of the SAP, with the following discussion. Several samples have surrogate recovery values outside the SAP criteria. The accuracy of the sample results is not compromised because a pattern was not observed. The high recovery of 4,4'-DDT in one standard reference material analysis does not impact the accuracy of the data set because the laboratory control samples and MS/MSDs are acceptable. The method blanks and field blanks are free of target compounds.

The accuracy of the metals data meets the DQO set forth in the SAP, with the exception of the antimony results and one zinc result. The antimony recovery in the matrix spikes and standard reference materials are below the SAP criteria. The matrix spike recovery values are below the Functional Guidelines lower limit (30%) that requires rejecting nondetected results. The pattern of low matrix spike and standard reference material recovery indicates the antimony data are biased low. Zinc recovered low from the matrix spike analysis of sample AN-321A, indicating a potential low bias to the zinc result. The laboratory control samples, method blanks, and field blanks are acceptable.

The accuracy of the conventional data meets the DQO set forth in the SAP. The TOC detected in one method blank does not affect the accuracy of the data set because the associated sample

concentrations are greater than five times the blank level. The matrix spikes and standard reference materials are acceptable.

7.3 Representativeness

Representativeness is the extent to which the data reflect the actual contaminate levels present in the samples. Representativeness is assessed through method and field blanks, and proper preservation and handling. Method and field blank analyses allow for the detection of artifacts that may be reported as false positive results. Proper sample preservation and handling ensure that sample results reflect the actual sample concentrations.

The data are assumed to be representative, with the exception of the samples analyzed past the holding time. The TBT results of samples AN-3113, AN-404, AN-405, AN-406, T23A (DM51E), T22A-2, and AN-403 may not be representative because the porewater extraction was performed past the required holding time. The bis(2-ethylhexyl)phthalate and TOC detected in the method blanks does not impact the representativeness of the data because the procedures in Functional Guidelines were followed to minimize the impact of the blank contamination. The samples were properly preserved and handled (the receipt temperature deviation is negligible).

7.4 Comparability

Comparability is a measure of how easily the data set can be compared and combined with other data sets. The data are assumed to be comparable since standard EPA methods were used to analyze the samples, the method QC criteria were met, and routine detection limits were reported.

7.5 Completeness

Completeness is expressed as the ratio of valid results to the amount of data expected to be obtained under normal conditions. Completeness is determined by assessing the number of samples for which valid results were obtained versus the number of samples that were submitted to the laboratory for analysis. Valid results are results that are determined to be usable during the data validation review process.

The 100% completeness goal of the SAP was not met. The completeness of this data set is 98.4%. The complete is less than 100% because the nondetected antimony results of the sediment samples were rejected due to a pattern of low spike recovery.

8.0 Definition of Data Qualifiers

8.1 Inorganic Data Qualifiers

The following data validation qualifiers were used in the review of this data set. These qualifiers are taken from Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA 1994).

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
- R The data are unusable. (Note: Analyte may or may not be present.)

8.2 Organic Data Qualifiers

The following data validation qualifiers were used in the review of this data set. These qualifiers are taken from Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1994a).

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

9.0 References

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- USEPA. 1994. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. United States Environmental Protection Agency. Office of Solid Waste and Emergence Response. February 1994.
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- USEPA. 1999. Methods and Guidance for Analysis of Water, Version 2.0. United States Environmental Protection Agency Office of Science and Technology. EPA 821-C-99-004. CD ROM. June 1999.

Table 2 – Summary of Qualified Data

Sample ID	Analyte	Qualifier	Reason for Qualification
T22A-2B	Bis(2-ethylhexyl)phthalate	U at reported value	Result is greater than the reporting limit and
AN-3113B		•	less than 10 times the blank level
AN-404A			The state of the s
T21A-2B	Pyrene	J	MS & MSD recovery below SAP criteria
			and RPD greater than SAP criteria
T19A-7	Pyrene	J	RPD value greater than 40
T17A-5	Pentachlorophenol	UJ	LCS recovery < 50%
T17A-6	•		200 1000 (01)
T19A-5			
Т19А-б			
AN-403 reanalysis			
T17A-7 reanalysis			
T19A-7			
T19A-8			
AN-406			
AN-302			
T23A-5			
AN-3111			
AN-3104			
T40A-4			,
AN4109			
AN-404			
AN-405			
T22A-2			

Sample ID	Analyte	Qualifier	Reason for Qualification
T16A-6A	All analytes flagged M	J	Estimated result with poor
T16A-6B	by the laboratory		spectral match
AN-402A			_
T22A-2A		:	
T22A-2B			
AN-3113A			
AN-3113B			
AN-404A			
T17A-5			
T17A-6			
T19A-6			
AN-403 Reanalysis			
T17A-7 Reanalysis			
T19A-7			
T19A-8			
AN-406			
AN-302			
T23A-5			
AN-3111			
AN-3104			
T40A-4			
AN4109			
AN-404			
AN-405			
T22A-2			
T15A-1			
T18A-3			
T18A-4			
T20A-1			
AN402			
AN-3113			
T18A-4B	All semivolatile	R	Internal standard recovery below method
	compounds		criteria (rejected in favor of the
			diluted analysis)
Т1бА-бА	Di-n-octylphthalate	J positive results	Internal standard perylene-d ₁₂ recovery
AN-402A	Benzo(b)fluoranthene		above method criteria
T22A-2A	Benzo(k)fluoranthene		
T22A-2B	Benzo(a)pyrene		
T17A-6	Indeno(1,2,3-cd)pyrene		
T19A-7	Dibenz(a,h)anthracene		
T15A-3	Benzo(g,h,i)perylene		

Sample ID	Analyte	Qualifier	Reason for Qualification
T16A-6B	Pyrene	J positive results	Internal standard chrysene-d ₁₂ and perylene-
T19A-6	Butylbenzylphthalate		d ₁₂ recovery above
T16A-5	Benzo(a)anthracene		method criteria
	Bis(2-ethylhexyl)phthalate		
	Chrysene		
	Di-n-octylphthalate		
	Benzo(b)fluoranthene		
	Benzo(k)fluoranthene		
	Benzo(a)pyrene		
	Indeno(1,2,3-cd)pyrene		
	Dibenz(a,h)anthracene		
	Benzo(g,h,i)perylene		
AN4109	Pyrene	J positive results	Internal standard chrysene-d ₁₂ recovery
	Butylbenzylphthalate		above method criteria
	Benzo(a)anthracene		
	Bis(2-ethylhexyl)phthalate		
	Chrysene		
AN-403 reanalysis	Phenol	J positive results	Internal standard 1,2 dichlorobenzenc-d ₄
T17A-7 reanalysis	1,3-dichlorobenzene		and naphthalene-d ₈ recovery above method
	1,4-dichlorobenzene		criteria
	Benzyl Alcohol		
	1,2-dichlorobenzene		
	2-methylphenol		
	4-methylphenol		
	2,4-dimethylphenol		
	Benzoic Acid		
	1,2,4-trichlorobenzene		
	Naphthalene		
	Hexachlorobutadiene		
The character of the ch	2-methylnaphthalene		
T16A-6A (reanalysis)	All semivolatile	R	Internal standard recovery above method
T16A-6B (reanalysis)	compounds		criteria
AN-402A(reanalysis)			
T22A-2A (reanalysis)			
T22A-2B (reanalysis)			
AN-403			
T17A-7			
T16A-5 Dilution	AUSVOA		D 14 -1 41 171
T18A-4A	All SVOA analytes	R	Result above the calibration range
T17A-6	flagged E by the laboratory		
T19A-6			
AN-4102			
T15A-3 AN4109			
	A11 SVOA1-4 £	n	I Immoography mold on allowed d
T18A-4A Dilution	All SVOA analytes for	R	Unnecessary result or elevated
T17A-6 Dilution	which the dilution was not		detection limit
T19A-6 Dilution	required		
AN-4102 Dilution			
T15A-3 Dilution			
AN4109 Dilution	All	T = aaitis14	Postion of outpoot last during analysis
T19A-5	All pesticides and PCBs	I positive results	Portion of extract lost during analysis
ll .	1	UJ detection limits	

Sample ID	Analyte	Qualifier	Reason for Qualification
T18A-4A	All P/PCB analytes	R	Result above the calibration range
T17A-6	flagged E by the laboratory		Tresum above the canonation range
T17A-7			
T16A-5			
T18A-4A Dilution	All P/PCB analytes for	R	Unnecessary result or elevated
T17A-6 Dilution	which the dilution was not		detection limit
T17A-7 Dilution	required		
T16A-5 Dilution	-		
AN-3113	TBT	J positive results	Porewater extraction hold time exceeded
AN-404		UJ detection limits	Total extraction hold time exceeded
AN-405			
AN-406			
T23A-5 (DM51E)			
T22A-2			
AN-403 (DM81A)			
AN-3113	TBT	J	Estimated result with poor
AN-404		•	spectral match
AN-405			spectral finites
AN-406			
T23A-5 (DM51E)			
T22A-2			
AN-403 (DM81A)	TBT	R	Internal standard recovery above method
reanalysis			criteria (rejected in favor of original
			analysis)
AN-403 (DM81A)	TBT	J	Internal standard recovery above
			method criteria
T17A-5	Zinc	J	Duplicate RPD greater than 20
AN-321A	Antimony	K	Matrix spike recovery < 30% and
AN-402A	,		not detected
AN-4102			
T17A-5	Antimony	J	Matrix spike recovery < 30% and detected
AN-321A	Zinc	J	Matrix spike recovery below SAP criteria
All sediment samples	Antimony	J positive results	Pattern of matrix spike recovery
	,	R detection limits	below 30%
All sediment samples	Antimony	J positive results	Pattern of standard reference material
		UJ detection limits	recovery below SAP criteria

Appendix A

Laboratory Communications (12 pages)